

THE AUTOMOBILE



Sweepstakes
Won by
National

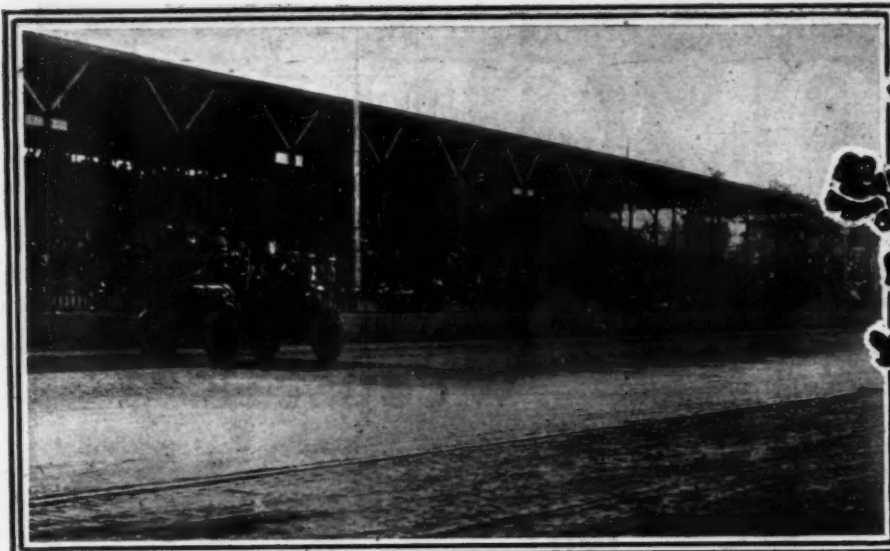


Dawson's National flashing over the tape at 85 miles an hour. (Circle) Dawson and his mechanic



INDIANAPOLIS, May 30—A National car, with Joseph Dawson, the boy driver of Indianapolis, at the wheel, won the most spectacular victory in this city today that has ever been witnessed on an American speedway, and it is questionable if it has a parallel in racing history. Victory came to the National-Dawson combination not at the eleventh hour, but almost on the stroke of twelve. Dawson won after he himself had accepted defeat; he won after numerous wagers placed on him had been paid. It all came about in an unexpected and unlooked-for man-

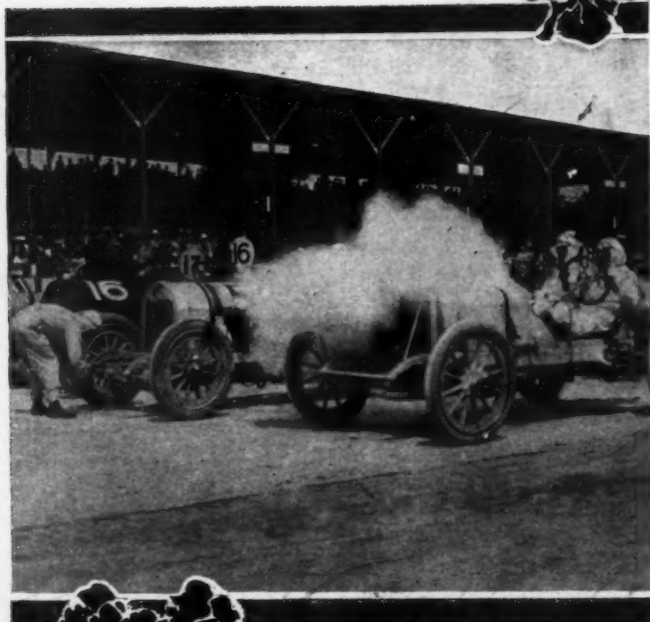
ner. Ralph DePalma, piloting a Mercedes special, led from practically the start and was never headed until he had finished 197 laps, or 75 miles from the finish. At that time he had a lead of over 11 minutes and was the acknowledged winner. But, like a flash of lightning from a cloudless sky at noonday, came a slow-up, a stop at the pit and a bad getaway. Scarcely had he rounded the first turn from the grand stand than his Mercedes slowed down to 30 miles an hour. Work as he would with the throttle and spark DePalma could not get any more speed. It went from bad to worse and when two laps from the finish his motor finally stopped, nearly a mile from the grand stand. He



Tetzlaff in the Fiat swinging into second place



Teddy Tetzlaff, Fiat



Ready for the starter

and his mechanic with true heroism pushed the heavy machine across the tape but two laps from the finish. Before this Dawson realizing the condition of his heretofore invincible rival pushed his car to the limit, not even shutting off on the turns to save tires, which precaution he had exercised up to this point in the race. Before DePalma could make a single lap with his Mercedes in its crippled condition the National had gained the 11 minutes and was leader. Tremendous applause greeted the Indianapolis-built car and the Indianapolis boy driver as they swung into first position.

Among the 80,000 spectators the period from the first symptoms of DePalma's weakness until Dawson's victory was one of the most intense excitement, the great masses in the grand stands with true American spirit all hoping for the victory of an American car and an American driver. Throughout the race there was great approval whenever Dawson got the slightest advantage over the foreign car at the pits, and when the Mercedes' weakness appeared the entire motordrome reverberated with one mighty

shout for the Hoosier driver and the Hoosier car. From that instant until Dawson flashed across the line a winner at a pace of 85 miles per hour, there was one resounding, continuous roar of applause.

But the plaudits were not all for the victor, and when, several minutes after Dawson had received the checkered flag, DePalma and his mechanic came down the home stretch bathed in perspiration and pushing their racing steed over the tape, the applause which greeted them was of equal volume. The great crowd, while lauding the winner, manifested equal enthusiasm for the defeated, who from start to finish showed the greatest sportsmanship and the greatest driving ever seen on a speedway in America.

Dawson's time for the 500 miles was 6:21:06 or an average speed of 78.7 miles per hour. At this pace he shattered every record made in last year's classic on this speedway. At the 100-mile mark he had cut 4 minutes from last year's record. At 200 miles he had clipped 10 minutes; at 300 miles 12 minutes; at 400 miles he had dropped to a 6-minute lead; and at the finish of the 500 he had 21 minutes leeway on the figures set by Harroun in a Marmon a year ago.

De Palma Smashed Most Records

The speed and smashing of records is an honor that must go to DePalma and his Mercedes, for he shattered every mark from 1 mile to 495. Here are his figures as compared with the records made in last year's race:

Car	1911	1912	Car	Distance
Bruce-Brown-Fiat	78:22	73:01	DePalma-Mercedes	200 Miles
Bruce-Brown-Fiat	159:28	144:47	DePalma-Mercedes	200 Miles
Harroun-Marmon	241:25	223:21	DePalma-Mercedes	300 Miles
Harroun-Marmon	323:15	296:34	DePalma-Mercedes	400 Miles
Harroun-Marmon	402:08	381:06	Dawson-National	500 Miles

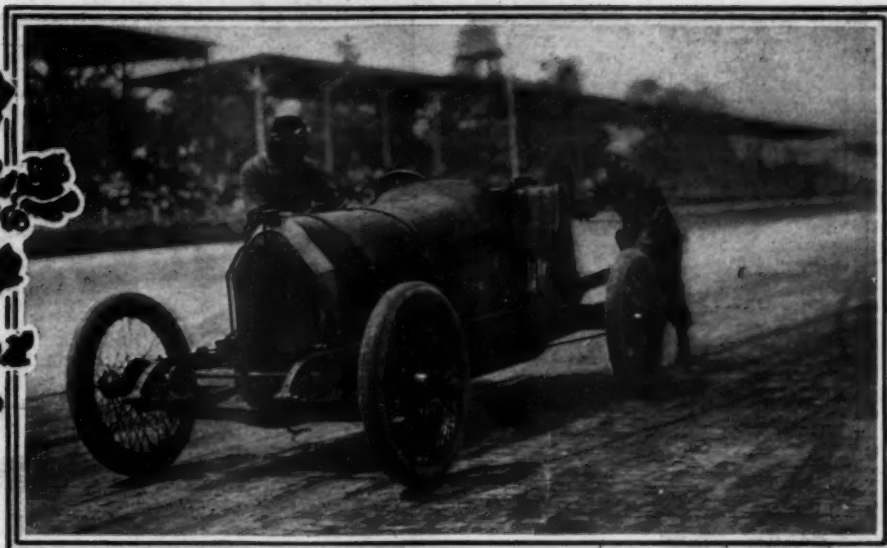
From this it is seen that today's race was 5 minutes faster at 100 miles, 15 minutes at 200, 18 at 300, 27 at 400, and 21 at 500 miles.

The pace set by DePalma from start to finish was a terrific one. He averaged 82.1 miles an hour for the first 100 miles; 83.6 for the second hundred, 79.7 for the third hundred, and 81 for the fourth hundred. Dawson's pace, while somewhat slower, was very consistent, averaging 80.7 for the first 100; 80.3 for the second 100, 75.2 for the third 100 and 79.4 for the fourth 100, and 78.5 on the last century.

Second place was captured by Tetzlaff in No. 3 Fiat, which was 10 minutes behind Dawson's National, his time being 6:31:29, or 76.6 miles per hour. The complete standing of the ten cars which completed the 500 miles with the order in which they finished is given herewith:



Hughie Hughes, Mercer



Hughes' Mercer ran out of gas, and was pushed to the pits

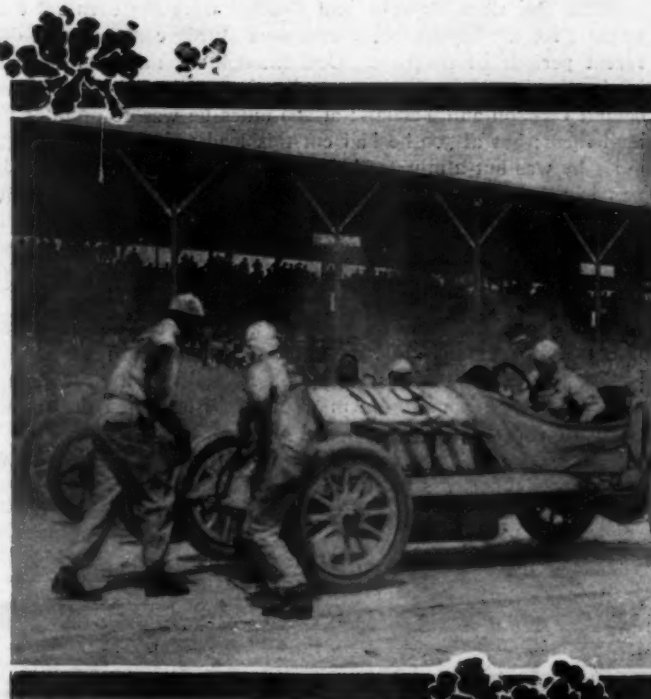
No.	Car	Driver	Time	Speed	Position
8	National	Dawson	6:21:06	78.7	First
3	Fiat	Tetzlaff	6:31:29	76.6	Second
21	Mercedes	Hughes	6:33:09	76.3	Third
28	Stutz	Merz	6:34:40	76.0	Fourth
18	Schacht	Endicott	6:46:28	73.3	Fifth
2	Stutz	Zengel	6:50:28	73.0	Sixth
14	White	Jenkins	6:52:38	72.7	Seventh
22	Lozier	Horan	6:59:38	71.4	Eighth
9	National	Wilcox	7:11:30	69.6	Ninth
19	Knox	Mulford	8:53:00	56.2	Tenth

Although the field consisted of but twenty-four cars, as compared with forty of last year, today's race was of greater interest, due partly to the better system of signaling the grand stands as to the positions of the cars, to the better tires, to the almost entire freedom from accidents, and to the enormous crowds. Of the twenty-four drivers who started today eighteen were pilots a year ago, and the skillful driving and entire freedom from accidents demonstrated the value of the experience. While there was not a fatal accident there were a couple of spills, the most serious being Burman with his Cutting in lap 156. On the second turn from the grand stand he blew two rear tires, the car turned crosswise on the track and got in the soft dirt inside the brick. It rolled over two or three times, throwing Burman and his mechanic clear. They suffered a few bruises, but watched the remainder of the race from the paddock. Earlier in the race Anderson, driving No. 1 Stutz, went through practically the same performance at the same point of the track, but neither he nor his mechanic was injured. Throughout the big crowd there was general joy over the freedom from accidents, the percentage of morbid sensation seekers being apparently vastly reduced as compared with former years.

Mercedes Gained on Every Lap

Today's race may be described as more or less of a runaway for DePalma. Tetzlaff in the Fiat took the lead for the first three or four laps, when DePalma's Mercedes was pushed to the front, and from that moment it gradually kept increasing this lead. Bruce-Brown in a National Special was one of the foremost contenders with the Mercedes until his elimination after 75 miles, due to a broken piston ring. At 20 miles DePalma had but 2 seconds advantage over him; at 40 miles, he had but 1 second lead, in fact, at this point the two cars were not a stone's throw apart and were maintaining a pace of over 82 miles per hour. But the terrific struggle soon ended, as valve trouble forced Brown to stop for 31 minutes. He was never a factor afterwards, withdrawing a few laps later.

Dawson, while a factor from the start, was not up with the leaders until nearly 50 miles had been covered. While DePalma



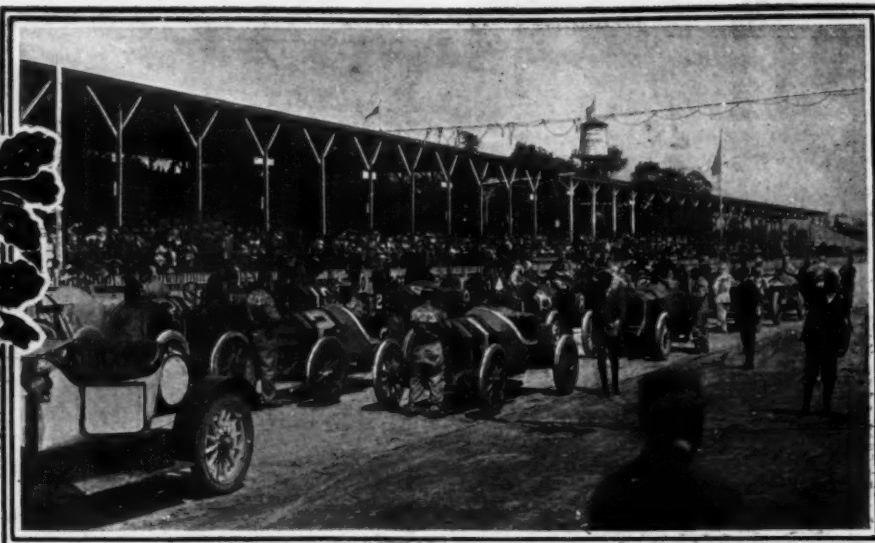
Quick action at the start

and Bruce-Brown were fighting at the start for first place, Wishart in another Mercedes, No. 7, was running a neck-and-neck race with Brown, and he continued as a factor until required to stop to change a right rear tire at 35 miles. This dropped him back more than 1 mile behind the leaders where he remained until his elimination, at 250 miles.

At the end of the first 100 miles the order among the leaders was DePalma, Tetzlaff, Dawson, Hughes, and Merz. DePalma having but 36 seconds on the Fiat. At the end of the second 100 DePalma was leading Tetzlaff's Fiat by 3 minutes, Dawson's National by 5, the Mercer by 8, and Merz's Stutz by 12. The Fiat lost second position at 220 miles, but gained it again at 240 and held it by the narrow margin of 3 seconds at 260 miles. At 280 miles Tetzlaff had a 4-minute margin on Dawson, but he lost it by a long stop just before reaching the 300-mile mark. At this time Dawson led him by 10 minutes. From this point to the finish Dawson held second place with a margin of from 10 to 15 minutes, finishing 10 minutes in advance of the Fiat.



Len Zengel, Stutz



General view of twenty-four cars lined up for the start

While DePalma, Dawson, and Tetzlaff were the eventual contestants for the honors, other cars were sturdy contenders at different periods of the race. One example of this was Burman in the Cutting No. 19. At 100 miles he was running 3 minutes behind Dawson and Tetzlaff; at 200 miles he was 10 minutes behind them; but at 300 he had cut this lead to 4 minutes; at 360 miles he was but 2 minutes behind the Fiat; and at 380 miles he was in third place and running 1 minute ahead of the Fiat, but 7 minutes behind Dawson. But misfortune came to him when in third position and while he was working consistently up to second place. As already mentioned, two blowouts ended his chances.

While DePalma, Dawson, Tetzlaff, and Burman were the only serious contestants among the big fighters at the front, Bruce-Brown and Wishart having dropped out earlier in the race, there was a big struggle going on in what might be called the second group of cars in the race.

Before entering on a brief analysis of this struggle, it is better to eliminate those cars that dropped out before the 200 miles was reached, these including No. 1 Stutz, 200 miles, upset; No. 5

Case, 160 miles, burned out connecting rod bearing; No. 6 Case, 120 miles, rear axle trouble; No. 7 Mercedes, 200 miles, broken water pipe; No. 10 Lexington, 18 miles, burned out connecting rod bearing; No. 12 Simplex, 280 miles, broken crankcase; No. 16 Firestone, 100 miles, burned out connecting rod bearing; No. 17 Marquette-Buick, 180 miles, motor troubles; No. 23 McFarlan, 140 miles, broken wheels; No. 24 Opel, 100 miles, broken gasoline line; No. 25 Lozier, 260 miles, burned out connecting rod bearing, and No. 29 National, 75 miles, burned out piston ring. With these eliminated it left but eight cars to battle in the great struggle for positions and the money.

Of these eight, Hughes in the Mercer No. 21, and Merz in No. 28 Stutz fought a continuous duel, so that at the finish of the 500 miles the Mercer had the advantage of but 1 minute and 31 seconds. Hughes, previous to the race, was looked upon as a contender for first place, everybody acknowledging his special car to be one of the best balanced machines on the track and to be the smoothest running contender for the \$50,000 cash. In practice he had shown remarkable time for short distances and remarkable tire mileage, and many calculated that he would win on the tire phase alone if he did not have sufficient speed. From the first lap in the race it was seen that his car had not the speed of the Mercedes, the Nationals and the Fiat, as it gradually lagged behind, losing about 100 yards to the lap. As after events proved, his tires were too small for the weight and speed.

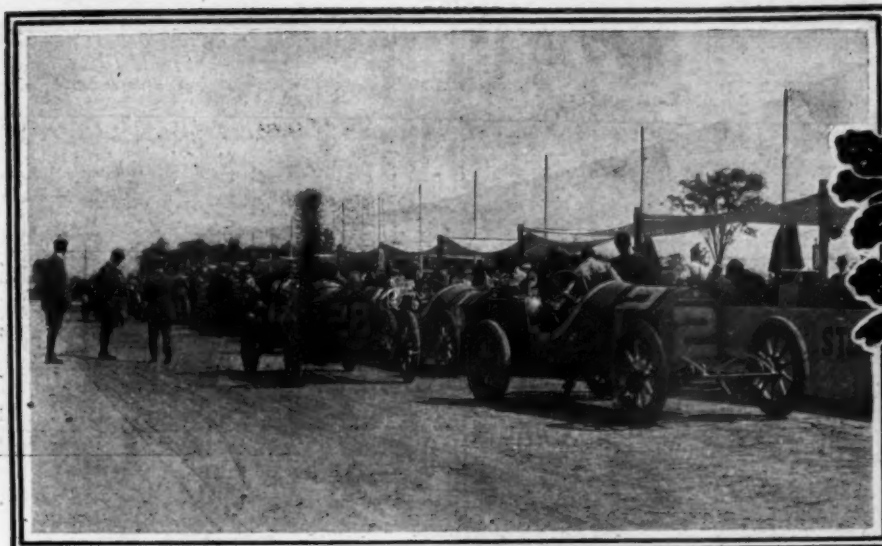
Interesting Mercer-Stutz Duel

The duel between the Mercer and Stutz began early. At 100 miles the Mercer had an advantage of but 15 seconds; at 200 he had a 4-minute lead; at 300 the Mercer's advantage was just 58 seconds; at 400 it was less than 2 minutes; and at the finish it led by 1 minute and 31 seconds. Both had varying tire experiences and while the Mercer showed the greater speed of the two it lost a big advantage by running out of gasoline at 240 miles. This happened 3-4 of a mile from the pits and Hughes with his mechanic pushed the car the entire distance to the pits. This lost him several minutes and undoubtedly he would have finished easily in second place had it not been for this mishap, for the Fiat, which finished second, had a margin of less than 2 minutes on the Mercer when the race was over. His gasoline troubles cost him in prize money over \$2,500 a minute.

While Hughes and Merz were battling it out for third and fourth positions, there was a varying struggle going on among Zengel, No. 2 Stutz, Endicott, No. 18 Schacht, and Jenkins, No. 14 White, a few minutes back of them. At the finish they were all closely bunched, scarcely 6 minutes separating the first of the trio from the last. Of these three the White had by far the greater speed, but was delayed from start to finish by tire



One section of field getting away



There was action at the pits during every minute of the race



Johnny Jenkins, White

Tire and Mechanical Troubles That Beset Racers

THIS year's race had fewer tire troubles than last year's although speeds were much higher in every case; so high, in fact, that every existing speedway record was broken. The reduction in tire wear was due to two causes: The first and major cause was the almost general use of buffed tires. Two years ago tire buffing was started in a moderate way. Buffing consists in grinding by a rough emery wheel, or similar grinder, a large percentage of the outside rubber on the tread of the tire casing, so that the fabric is near the surface. On the face of it, this would seem to reduce the length of service, but in reality it increases it. Removing the outer rubber permits a much more rapid radiation of heat, thus preventing blowouts. Last year, owing to the heavier rubber treads and the oil on the course, the tread strips came off in a ring and were thrown over the fences. Once these were off, the tire was generally changed. This year

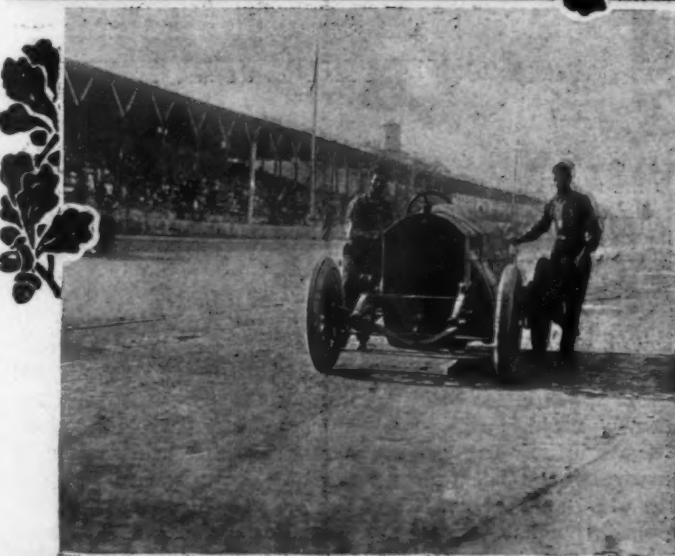
troubles. In the first century it averaged 78.06 miles per hour to 70.9 by the Schacht and 69.9 by the Stutz. But the race was not all to the speedy, and while the White had an advantage of 8 minutes over its rivals at this point, it had, at 200 miles, but 7 minutes on the Schacht and 9 minutes on the Stutz. In the third century it stopped twice for tires and at 300 miles had a 5-minute lead on each. In the fourth century it made three tire stops, the Schacht forging ahead and the Stutz being but 3 minutes back of the White at the 400-mile mark. But the tire troubles which followed the latter in the fourth century pursued it with greater tenacity in the fifth. The Schacht was never headed and the Stutz passed it in the last 20 miles when the right front rim of the White became damaged, several of the last circuits being made without a tire.

Mulford, whose Knox was generally regarded as the fastest car on the Speedway, was not a factor continuously in any portion of the race. At the start his speed was sufficient to keep him up with the second brigade, but clutch trouble followed him persistently throughout the race. At one time he stopped 35 minutes at the pit; at another time 40 minutes; and at another time 7 1-2; and in addition to these he had frequent stops of 1 minute or more changing tires, so that when the end came he had lost 78 minutes. He was the last to finish the race, running at that time 2 hours behind the leader. He continued circling the Speedway after the entire grand stands were empty and every one but a few officials had left the Speedway. It was necessary for him to complete the entire 500 miles in order to participate in the prizes, his share for finishing in tenth place being \$1,200.

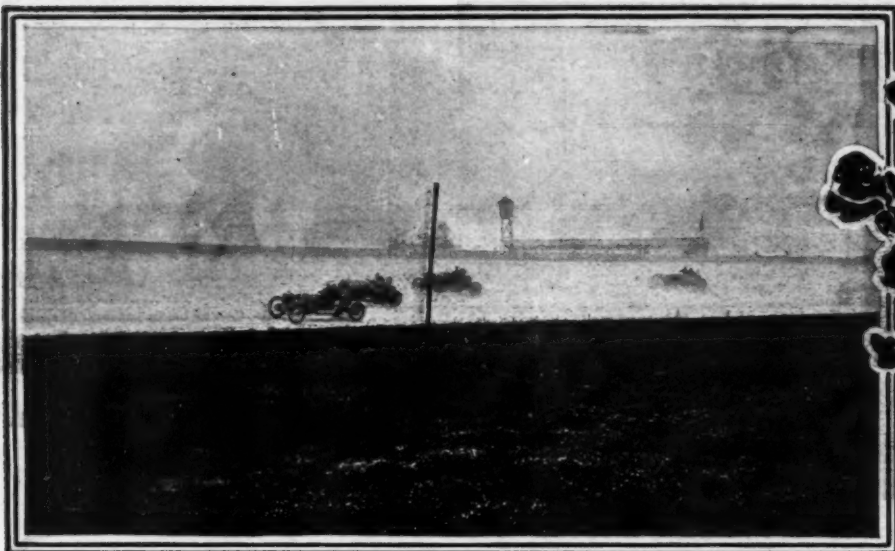
there was not more than one or two examples of tread strips coming loose, and as a result tires wore until the threads of the fabric gave away and a blowout occurred. The buffing of an ordinary tire consumes about 1 1-2 hours. Many of them were buffed to leave the tread oval, but others were buffed to leave two parallel circumferential ridges of rubber on the tread.

Of the twenty-four cars starting, twenty were fitted with Michelin tires, two with Palmer cord tires of English manufacture, one with the Miller tire of California, and one with Firestone tires. The two Case cars used the Palmer Cord tire, the Fiat used the Miller, and the Cutting used Firestones. In the finish Michelin had first place, Miller second, and Michelin third.

The time occupied in changing tires was generally much shorter than in any previous races. The length of stop necessary for a change of one tire was in 70 per cent. of the cases 1 minute, but there were many examples of where a car stopped, changed a tire and got away in much less time. For example,



DePalma's pathetic return to pits



Leaders settling down to a stiff pace on the first turn



Trio of hard-working officials



Pacemaker led the first lap

DePalma in lap 88 stopped, changed a right front, and was gone in the remarkable time of 30 seconds. Wishart in another Mercedes completed the operation of changing a right rear tire in lap 52 in the same time.

A new factor in tire-changing was the introduction of the wire wheel used on the Mercer, Case and Firestone cars. With a wire wheel, a demountable rim is not used, but the entire wheel removed. The hub has a double construction; an inner part containing the bearing is permanently attached to the axle end, and an outer hub integral with the wheel is fitted over the inner one. One nut, with locking mechanism, holds the wheel in place. Hughes in the Mercer, made several stops and by stopwatch it required 45 seconds from the time the pitman started changing the wheel until the new wheel was on. The stops generally averaged 1 minute. From this viewpoint the demountable wire wheel is practically on a par with the demountable rim.

There was not sufficient opportunity to get a definite line on the increased mileage from tires because of wire wheels. The only ones where this might have been possible was with No. 21 Mer-

cer, which used Rudge-Whitworth wheels. This car made seven changes, these being necessary, it was claimed, owing to the tires not being large enough for the car. The tires used were 805 by 815 millimeters. The Case and Firestone cars did not run for a sufficient length of time to give information on the value of wire wheels. In future races this matter will be watched very closely.

When looking into the question of tire wear the second reason why it was less than last year was owing to track conditions. The track was freer from oil because of the application by sprinkling of Wyandotte, a product which absorbed and partially dissolved the oil. This left the track surface dry and perhaps a little rougher than last year.

Outer Tires Suffered the Most

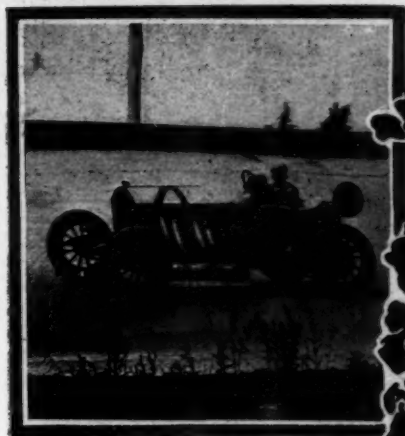
It was the right rear and right front tires that gave nearly all of the trouble. The outer tires have much of the car weight thrown on them on the curves and in case of skidding they generally get farther out on the rough, which helped to wear them out. The drivers had studied the track from the viewpoint of tire wear and possibly speed. Throughout the race Dawson shut off on the turns until the last two or three laps, when he became aware of DePalma's misfortune. Without shutting off on the turns he estimated a tire good for 75 miles on the right rear at a speed of 1:44 to the lap. DePalma, Dawson, Tetzlaff and Mulford drove near the outer edge where they discovered smooth stretches.

Dawson made seven tire stops with his National, changing four right rears, one left rear and two on the right front. The left front tire was not changed from start to finish. Twelve minutes were lost at the pits in these tire changes, but gasoline, oil and water were taken on at the same time. Stops for tires were made in laps 78, 107, 142 and 175. He made one stop in lap 81 to change a spark-plug. His total time lost at the pits was 14 minutes.

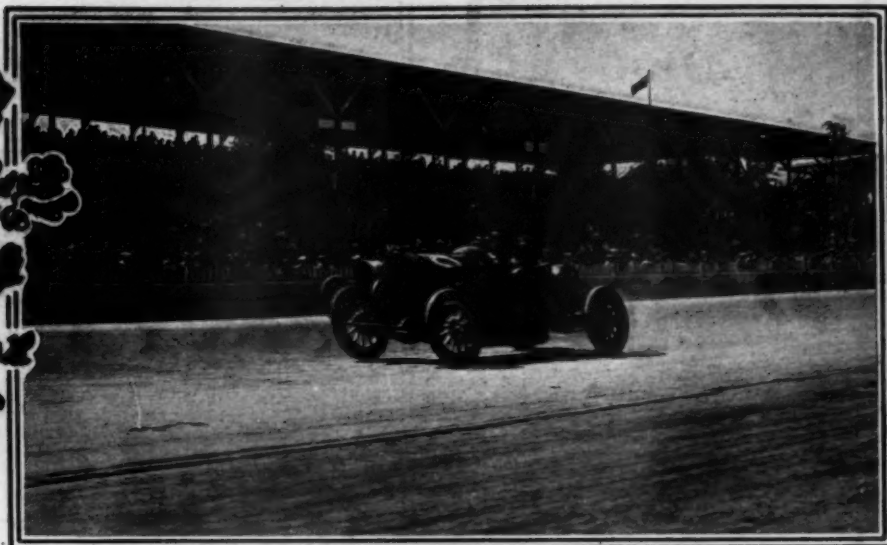
DePalma's record in the tire field was a particularly clean one, making but three changes, one on the right rear and two on the right front, and requiring 2 1-2 minutes. He made two other stops, one of 1 minute for gasoline and another of 30 seconds to adjust the carbureter. His total lost time at the pits was 4 minutes, an advantage of 10 minutes over Dawson. His tire stops were in laps 88, 112 and 179.

Tetzlaff has a record of four tire stops, with 10 minutes loss of time. These were made in laps 84, 114, 141, and 182. In addition to these he had a 5-minute stop for gasoline and oil in lap 158 and a stop for motor trouble in lap 113. He lost 16 minutes at the pit.

Hughes in the Mercer made seven tire changes, four of which



DePalma on back stretch



Wilcox in National No. 9 trying to make up lost time

were blow-outs, and the others changed in order to prevent blow-outs. Nine minutes were lost. His only delay was due to running out of gasoline in lap 96 when with his mechanic's aid he pushed the car nearly the entire length of the homestretch.

No. 28 Stutz made three tire stops—in laps 48, 103 and 158. It was the right rear in every case. Stops averaged 1 minute each time. His loss of time at the pits was 5 minutes, which was the second best performance at the pit for a car to go practically the entire distance, it being bettered only by DePalma's 4-minute mark.

Endicott in No. 18 Schacht lost 10 1-2 minutes at the pits. He changed all tires except the left front.

Zengel in No. 2 Stutz lost 16 1-2 minutes at the pits, and had eight tire changes.

The greatest number of tire changes at the pit was on No. 14 White, thirteen stops being necessary. These were in laps 22, 41, 58, 82, 111, 118, 121, 148, 159, 176, 190, 192 and 194. In the last 25 miles a broken rim caused much of the troubles. Eighteen minutes were lost at the pits.

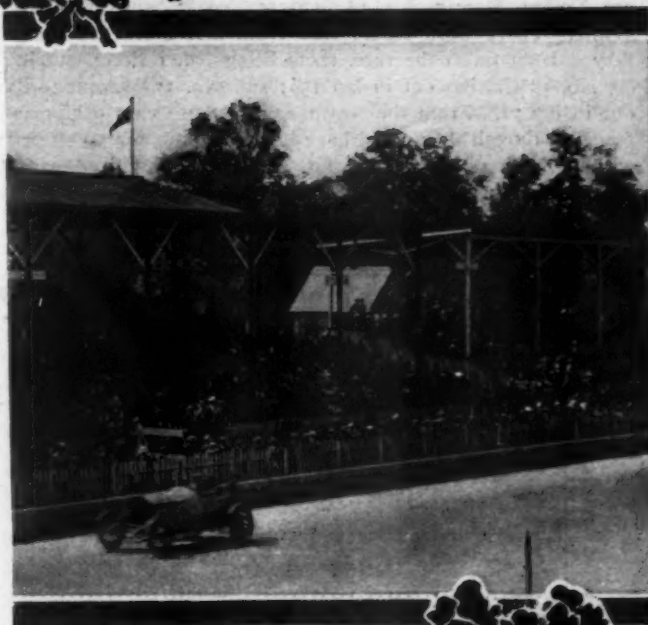
Of the remaining three cars to finish the 500 miles, Horan's Lozier, No. 22, lost 13 minutes at the pits; No. 9 National, 34 minutes; and No. 19 Knox, 78 minutes. The Knox trouble was largely a slipping clutch; the National was valve trouble, and the Lozier tires and carbureter.

Analysis of Mechanical Troubles

In an analysis of the mechanical troubles of the cars it is only fair to preface any remarks by the statement that lack of adequate lubrication caused the elimination of several cars. There were instances of spark-plug trouble due to too much oil, and there were several burned-out bearings in connecting rods owing to insufficient oil. It would seem to indicate that the ordinary splash system of oiling cannot be relied upon in such a severe test, although in several instances it proved adequate. One of the lubrication troubles, which caused burned-out connecting rod bearings, was the apparent stopping of the too small oil leads to these parts. This suggests the necessity of larger diameter leads and possibly the use of hollow connecting rods with oil leads 1-2-inch in diameter.

Spark-plugs were changed by the following: Dawson, National, one; Wilcox, National, two; Rickenbach, Firestone, one; Dingley, Simplex, two and Hearne, Case, one. Several of the drivers stopped momentarily to adjust carbureters, and while it is not known whether the carbureters were at fault or whether lubrication was the cause, it was apparent that the drivers preferred to work on the carbureter first.

Owing to lack of lubrication broken connecting rods were



DePalma passing grand stand

charged up against Ormsby's Opel eliminated in lap 7; Matson's Lozier, No. 25 in lap 110; DePalma's Mercedes lap 198; Knight's Lexington No. 10 in lap 7; and Dingley's Simplex, No. 12 in lap 116, the reported trouble being a broken crankcase.

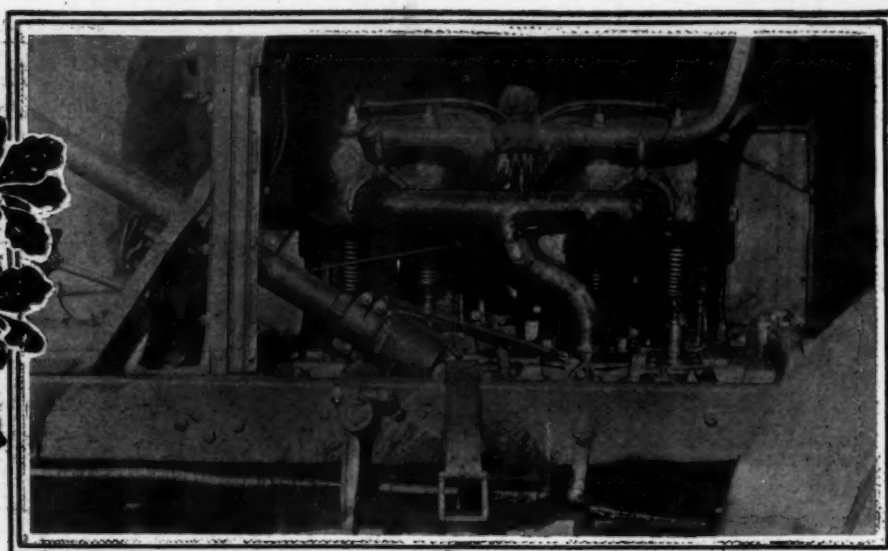
Broken valves presented themselves in three or four cases. These were largely on special motors, such as the Wilcox and Bruce-Brown Nationals. Dingley, driving the Simplex, also changed a valve.

There were a few cases of making brake adjustments during the race, one being Disbrow's No. 5 Case. Two or three troubles were due to leaking gasoline lines. Matson's Lozier had this trouble; Wilcox's National had symptoms of it; No. 28 Stutz driven by Merz had similar trouble; and No. 12 Simplex, also. No. 2 Wishart's Mercedes was eliminated by a broken water pipe, this being the only example of such trouble. Vast improvement was shown in radiator construction, there being very few cases of overheated motors at the pits and not an example of leaking radiators.

Last but not least attention must be given to those cars that



Hughes getting away after stop



Intake side of motor of the winning Dawson National

were entirely free from mechanical trouble and whose only stops at the pits were for tires, gasoline, oil and water. In this class are No. 21 Mercer, No. 18 Schacht, No. 2 Stutz, and No. 14 White. There were others free from mechanical troubles, but they did not finish the race, these being No. 1 Stutz, out in lap 80, No. 15 Cutting out in lap 156; and No. 17 Marquette-Buick out in lap 71. From the way many of these cars performed it seems as though they could have kept on going for a day or two without having to raise the hood. The motors fired with the utmost regularity though the speed was not so great as in some of the cars that had mechanical troubles.

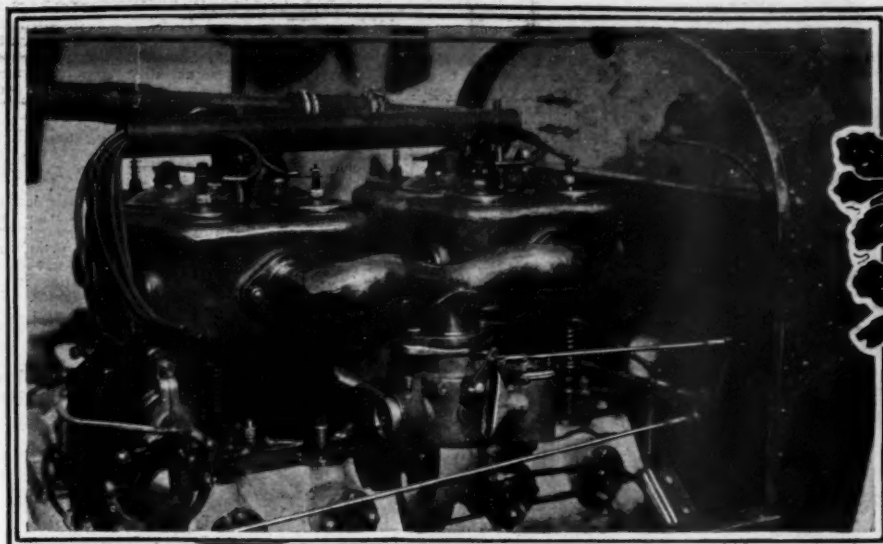
Performances of the Contesting

IN the story of the race by centuries, 100 miles, many interesting details are brought to the surface, both from the standpoint of speed and also from tire troubles and mechanical difficulties. With many of the drivers the first 100 miles is the fastest and if not the first 100, then the second 100. There was a general perceptible slowing up in the third 100 miles and a creeping up to higher speeds in the fourth and fifth centuries. It and 400 miles. From a careful analysis of the tire situation there,

TABLE SHOWING TIME OF CARS IN 500-MILE SWEEPSTAKES AT 20-MILE

No.	CAR	DRIVER	Laps Miles..... 8 20	16 40	24 60	32 80	40 100	48 120	56 [140]	64 160
1	Stutz.....	Anderson.....	Order of Finish	15:40	30:56	47:48	62:52	78:10	95:39	110:43
2	Stutz.....	Zengel.....	Sixth	15:20	32:39	53:34	68:33	85:47	101:01	118:47
3	Flat.....	Tetzlaff.....	Second	14:49	29:48	44:31	59:08	73:37	88:10	102:40
4	Mercedes.....	DePalma.....		14:38	29:19	43:59	58:33	73:01	87:26	101:52
5	Case.....	Disbrow.....		15:31	34:03	50:10	65:11	80:11	95:11	110:11
6	Case.....	Hearne.....		15:45	34:43	54:38	71:12	81:01	109:05	129:44
7	Mercedes.....	Wishart.....		14:40	29:19	43:59	58:33	73:01	87:26	101:52
8	National.....	Dawson.....	First	14:55	29:45	44:32	59:23	74:24	89:15	103:48
9	National.....	Wilcox.....	Ninth	14:52	29:45	44:32	59:23	74:24	89:15	103:48
10	Lexington.....	Knight.....	Out in 7th lap		29:45	44:32	59:23	74:24	89:15	103:48
12	Simplex.....	Dingley.....		14:55	30:32	54:03	69:36	84:09	98:42	113:15
14	White.....	Jenkins.....	Seventh	15:31	30:38	46:03	61:05	76:19	91:41	106:41
15	Cutting.....	Burman.....		15:18	30:33	45:49	60:40	75:41	90:41	105:41
16	Firestone-Col.....	Reichenbach.....		15:46	30:57	46:01	61:02	76:03	91:03	106:03
17	Marquette-Buick.....	Liesaw.....		15:51	31:35	47:30	63:42	79:42	95:42	111:42
18	Schacht.....	Endicott.....	Fifth	16:15	32:23	48:33	64:33	80:33	96:33	112:33
19	Knox.....	Mulford.....	Tenth	14:54	29:28	44:34	59:34	74:34	89:34	104:34
21	Mercer.....	Hughes.....	Third	15:05	30:01	44:50	59:41	74:31	89:21	104:11
22	Lozier.....	Horan.....	Eighth	15:20	30:33	46:03	61:31	77:21	93:11	108:01
23	McFarlan.....	Marquette.....		17:39	33:27	49:11	64:49	80:21	95:41	110:57
24	Opel.....	Ormsby.....	Out 7th lap, broken gasoline line		15:46	30:34	45:38	60:38	75:38	90:38
25	Lozier.....	Matson.....		15:29	30:31	45:30	60:31	75:31	90:31	105:31
28	Stutz.....	Merz.....	Fourth	15:42	31:07	46:35	62:08	77:41	93:11	108:41
29	National.....	Bruce-Brown.....		14:40	29:20	43:59	58:59	73:59	88:59	103:59

NOTE—Only 10 cars finished.



Intake side of the motor of Hughes' Mercer



Tunnel under the speedway

Cars for Each Hundred Miles

were approximately ninety stops for tire changes during the day, these being divided up as follows:

First 100 miles.....16 tire stops.

Second 100 miles.....14 tire stops.

Third 100 miles.....30 tire stops.

Fourth 100 miles.....16 tire stops.

Fifth 100 miles.....14 tire stops.

These figures show that the third century had as many tire

changes as the first and second together and also as the fourth and fifth. This was the point in the race, also, where the final order of the finishers was evolved, and from 300 miles to the finish was more or less of a procession of the cars coming in practically the same order.

The elimination of cars took place very early, very much earlier than usual in so big a race. Ten of the twenty-four cars were out before the race was half over. There were only three cars to drop out after the halfway point, these three being Matson's Lozier No. 25, at 25 miles after the middle of the race;

(Continued on page 1294.)

INTERVALS FROM START TO FINISH, WITH THE TIME FOR EACH 20 MILES

	64 160	72 180	80 200	88 220	96 240	104 260	112 280	120 300	128 320	136 340	144 360	152 380	160 400	168 420	176 440	184 460	192 480	200 500
110:43	125:31	140:30	Out in 79th lap															
15:04	14:48	14:59																
118:47	137:28	152:51	169:51	185:11	200:10	215:23	229:29	247:18	262:42	283:01	298:03	316:11	330:56	345:00	363:46	378:35	393:24	408:31
17:46	18:41	15:23	17:06	15:14	14:59	15:13	14:06	17:49	15:31	20:12	15:02	28:08	14:25	14:04	18:46	14:49	14:49	15:07
102:40	117:05	131:32	147:51	167:24	181:49	196:16	210:51	230:52	248:30	263:14	282:36	299:01	319:01	333:28	346:10	361:25	375:55	391:29
14:30	14:25	14:28	16:19	19:33	14:25	14:27	14:35	28:01	19:28	14:34	19:22	16:25	20:00	14:27	12:32	15:15	14:30	15:24
101:52	116:15	130:26	144:47	160:41	176:22	190:50	206:53	223:21	237:44	252:17	266:53	281:42	296:34	312:27	327:10	343:14	358:16	Out*
14:26	14:23	14:11	14:21	15:54	15:31	13:28	16:03	16:18	14:23	14:33	14:36	14:49	14:52	15:53	15:17	16:04	15:02	
129:44	217:21	Out 67th lap, burned out, connecting rod bearing																
15:02	27:37	Out lap 54, broken differential																
108:25	123:20	138:09	155:19	Out 92d lap, broken water connections														
16:05	14:55	14:49	17:10															
103:48	118:21	132:49	149:05	167:19	183:36	196:19	214:19	228:50	243:14	259:39	277:13	291:39	304:14	318:46	336:17	351:39	366:50	381:06
14:33	14:33	14:28	16:16	18:14	16:17	12:43	18:00	14:31	14:24	15:33	17:34	14:19	12:42	14:32	17:31	15:12	15:11	14:16
136:12	152:70	167:21	191:50	210:20	225:29	243:53	258:57	273:57	297:07	307:21	323:50	338:36	350:32	365:34	381:48	399:09	414:39	431:30
13:01	16:08	15:01	24:29	48:40	15:09	18:14	15:04	15:00	18:10	15:14	16:29	14:46	11:56	19:58	16:14	17:21	15:40	16:42
133:30	153:24	169:23	185:11	200:56	223:57	250:09	265:51	Out lap 116										
15:26	19:35	15:59	15:48	15:45	23:01	16:12	15:42											
111:46	130:40	145:43	160:45	179:10	194:18	209:19	226:56	242:44	260:08	275:18	290:24	310:18	327:15	342:20	358:51	373:58	393:07	412:38
15:05	18:54	15:03	15:02	18:30	15:08	15:01	15:37	15:48	17:24	15:10	15:06	19:54	16:57	15:05	16:31	15:07	19:09	19:31
113:24	128:24	143:26	158:27	171:41	186:26	199:23	217:56	232:39	250:33	262:21	284:02	298:01	Out in 156th lap					
18:54	15:00	15:02	15:01	13:14	15:45	12:57	16:33	14:43	17:54	11:48	21:41	14:59						
	Out lap 44, broken connecting rod																	
112:12	128:14	144:16	Out 71st lap															
15:51	16:02	16:02																
116:30	133:26	152:16	167:28	182:31	197:41	212:42	232:13	247:19	264:04	273:37	290:19	308:19	324:29	340:33	356:40	372:55	390:50	406:28
15:56	16:46	18:50	15:12	15:03	15:10	15:01	19:31	15:06	16:45	09:33	16:52	18:00	16:10	16:04	16:07	16:15	15:55	15:28
120:04	137:05	153:15	195:01	254:19	271:54	294:48	308:34	327:06	345:30	363:47	382:06	401:20	421:56	442:38	.....	.....	.....	450:23
17:01	16:10	41:46	39:18	22:56	23:46	18:32	28:24	28:24	18:17	18:29	19:14	20:36	22:42	.....	.....	.....	.....	.....
107:37	122:37	137:45	152:48	167:50	182:48	202:42	217:50	235:24	253:51	269:00	285:36	300:25	316:37	331:33	346:41	361:57	378:47	393:09
18:19	15:00	15:08	15:03	15:02	14:58	19:54	15:08	14:24	18:27	15:09	16:36	14:49	16:12	14:56	15:08	15:16	16:50	14:22
110:07	125:47	141:31	157:25	179:44	195:45	211:24	229:00	244:44	260:59	277:06	298:03	316:56	333:57	350:57	367:12	384:57	401:25	425:57
15:43	15:40	15:44	15:54	22:19	16:01	15:39	17:36	15:44	16:15	16:07	20:57	18:53	17:01	17:00	16:15	17:45	16:38	24:32
110:57	Out 65th lap, broken wheels																	
15:16																		
121:09	138:09	158:28	182:55	206:08	224:13	239:30	Out 110th lap, burned out connecting rod bearing											
16:14	17:00	20:20	24:27	23:13	16:05	15:17												
110:27	126:01	141:30	156:53	172:30	187:50	203:07	220:26	236:22	251:28	266:27	285:00	300:13	318:14	333:37	348:49	364:17	379:28	394:40
19:17	15:34	15:29	15:23	15:37	15:20	15:17	17:19	15:56	15:06	14:59	18:33	15:13	18:01	15:23	15:12	15:28	15:11	15:12

*Burned out connecting rod bearing.

Legal News of the Week

Court of Appeals Modifies Recent Decision Charging Badger Company with Unfair Competition

Accounting to Rushmore to Include Only the Cases Where Damage Resulted

THE decree entered by the United States Circuit Court in the suit charging unfair competition which was brought by Samuel W. Rushmore against the Badger Brass Manufacturing Company, of New York, has been modified on appeal of the Badger company to the United States Circuit Court of Appeals.

The suit was brought on account of an alleged imitation of the Rushmore lamps by the defendant company, which, it was charged, resulted in confusion to the trade.

The court below held that the defendant was guilty and adjudged an accounting and an injunction.

In the opinion of the United States Circuit Court of Appeals the decree of the Circuit Court extended too far and the order of court provides for relaxing the accounting so that it shall include only such transactions in which it can be shown by direct or presumptive evidence that actual damages have been sustained in that the complainant would have sold the lamps but for the sale by the defendant.

The court, in the course of the opinion, lays down a rule that a decree for profits and damages does not necessarily follow a decree for an injunction.

The court affirms the decree in other particulars, allowing the injunction to stand. The Badger company showed that it had abandoned the manufacture of the specific type of lamps that was involved in the suit.

The court's opinion in full is as follows:

UNITED STATES CIRCUIT COURT OF APPEALS For the Second Circuit.

SAMUEL W. RUSHMORE,
Complainant-Appellee,
against
THE BADGER BRASS MANUFACTURING
COMPANY,
Defendant-Appellant.

Before
COXE, WARD and NOYES,
Circuit Judges.

On appeal from a decree of the Circuit Court for the Southern District of New York in favor of the complainant holding the defendant guilty of unfair competition in making motor lamps in imitation of similar lamps designed by the complainant and granting an injunction and an accounting. Charles K. Offield and Albert H. Graves for Appellant. Alfred Wilkinson for Appellee.

PER CURIAM:

We have examined the record with care to ascertain if there is any testimony which distinguishes this case from *Rushmore v. Manhattan Screw and Stamping Works*, 163 Fed. Rep., 939, and *Rushmore v. Saxon*, 170 Fed. Rep., 1021.

In the *Manhattan* case the Circuit Court found "that the shape, appearance, external attachments and general dress of the Rushmore lamp are not functional and are not elements of mechanical construction essential to the successful practical operation of the lamp as a lamp." We agreed with this finding and, because of it, affirmed the order, stating, however, that the conclusion carried the doctrine of unfair competition to its utmost limit. We think the doctrine should not be further extended, but there is no occasion for extending it so far as the case at bar is concerned. In all essential particulars the facts are the same.

Slight differences exist between the defendant's lamps and those of the complainant, but these differences are unimportant and are no more pronounced than in the cases above referred to.

The ordinary purchaser of an automobile is often ignorant of the actual merits and value of the articles he purchases and is influenced largely by general appearance rather than details of construction. He sees a speedometer, a lamp, a clock, or some other of the numerous motor car attachments, which is pleasing to the eye and, having ascertained the name of its maker, resolves to have it on his car. If the general appearance be the same, he does not examine further and is entirely satisfied that the device he buys is what he intended to buy. This is true of the careless, credulous and ignorant purchasers, who are certainly as numerous in this as in any other field of business, and depend largely upon the statements of local dealers and the chauffeurs who drive their cars.

An expert and probably a great majority of automobile purchasers could not be deceived into taking the defendant's lamp, in evidence, for the Rushmore lamp, but the ignorant or careless purchaser looking to general effect and not to what seems to him to be inconsequential details would, very likely, be misled. Such simulations place in the hands of dishonest dealers and agents the materials for misleading and cheating the public. It is unnecessary to dwell on these considerations as they have been stated many times by this court and need not be repeated. When it appears that a competitor has unnecessarily and knowingly imitated his

rival's goods in non-functional features, a court of equity is justified in interfering. Further than this we do not intend to extend the doctrine.

The defendant asks that it be relieved from an accounting, or, at least, that the accounting be limited to the damages actually sustained and proved by the complainant. We are inclined to think that the latter request is reasonable and should be granted.

The defendant's brief states that it appeared at the hearing in the Circuit Court that the defendant "had long ago ceased making or selling any of the type of lamps in issue."

The testimony that the defendant, or its agents, attempted to palm off its lamps as Rushmore lamps is unsatisfactory and unconvincing.

We are also convinced that the great majority of the defendant's lamps were sold on their merits and on the established reputation of the defendant, without any reference to the complainant's lamps. To award the entire profits made on the sales of defendant's lamps without proof of actual fraud on its part would be inequitable. An accounting covering the entire field of the defendant's sales would involve both parties in a long and expensive examination unwarranted by the probable results. It seems to us unfair that the complainant should recover profits on the sale of lamps by the defendant to persons who never heard of Rushmore and were well aware that the lamps they bought were made by the defendant, and who bought them because they were so made. A decree for profits and damages does not necessarily follow a decree for an injunction.

In *Ludington Novelty Co. v. Leonard*, 127 Fed. Rep., 155, this court said:

"We see no reason to differ with the Circuit Court in its refusal to order an accounting. If we could discover any theory upon which a substantial recovery might be had we would not hesitate to direct a reference, but it is plain that such a proceeding will prove abortive after subjecting both parties to large additional expense and the defendants to unnecessary annoyances. The master would be involved in an inextricable tangle from which it will be impossible to emerge with a substantial recovery based upon a rational rule of damages. The boards sold by the defendants, and which they had a right to sell, were intended to be used in connection with a large number of games in the description of some of which the word 'Carrom' might, in certain aspects, be used innocently. An attempt to segregate the profits, if any, resulting from the illegitimate use of the word would require an excursion into the realms of conjecture and speculation without hope of any tangible result."

See also *Fairbank Co. v. Windsor*, 124 Fed. Rep., 200.

We think the accounting should be limited to sales where it is shown by direct or presumptive evidence that the complainant would have sold the lamps but for the sale by the defendant.

As so modified the decree should be affirmed with costs.

Gilbert vs. Republic Case Settled

Settlement of the suit of Gilbert *versus* the Republic Rubber Company has been made and the suit has been discontinued in the United States District Court. The matter at issue was a claim by J. M. Gilbert founded upon a license covering an automobile rim device. The Republic company took out the license and the suit was brought to enforce collection of the royalties. The terms of the settlement were not given out publicly, but it is stated that a substantial sum was involved. James L. Suydam, of the firm of Briesen & Knauth, handled the case for Mr. Gilbert.

Owen Motor Company Sues the Reo

DETROIT, MICH., June 4—Suit for \$330,000 has been brought in Judge Hosmer's court here by the Owen Motor Company against the Reo Company of Lansing, Mich. The suit grew out of the purchase of the former concern by the latter some time ago. At the time of the purchase the Owen company maintained a factory in Detroit which manufactured a high-powered car known as the Owen. The purchase price was \$1,000,000, paid in

Weed Fighting Re-Sale Clause

The Weed Chain Tire Grip Company has issued a booklet to the trade calling attention to the re-sale clause in the proposed patent bills now pending before both houses of Congress. In concise form the booklet outlines the proposition of restricting re-sale prices and states that the sale of widely advertised patented articles without profit by certain houses would be welcomed by them because of the prestige afforded by handling such goods and because of their drawing force upon customers generally.

It points out that these concerns cannot afford to do business at no profit and that they intend to make up for the lack of profit on such patented articles by selling other articles from stock at a large margin.

In arguing against the bills the booklet says that no manufacturer would dare to set his retail prices on patented articles too high, for the public would not then buy in volume and competitors would undersell.

stock of the Reo Company. According to the bill of complaint, the Reo promised to continue the manufacture of the Owen car at Lansing and to pay over all profits from Owen sales less 10 per cent. to the Owen Company. The complaint states that the Reo Company has abandoned the manufacture of the Owen car and that no profits are forthcoming. The Reo Company, in its answer, asserts that the cars were unsalable and that it was unable to get rid of more than thirty cars despite an advertising expense of \$30,000. Trial of the case will take up a month or 6 weeks. Prominent counsel appear on both sides.

Must Sue Liable Parties Separately

COLUMBUS, OHIO, June 1—Judge C. M. Rogers in the Franklin County Courts has ruled that the Studebaker Automobile Company and the Columbus Railway & Light Company were jointly liable for the death of Walter M. Turner, a mail collector of Columbus, who was killed by a street car while riding on an automobile mail collection wagon several years ago. He also held that the two companies could not be sued jointly by the heirs of the deceased. Suit was brought by the heirs against the Studebaker Company and the Columbus Railway & Light Company, which was dismissed, as they were not related to each other in the commission of the act.

Overland Sued by Building Expert

TOLEDO, O., June 1—Claude A. P. Turner, of Minneapolis, has filed a bill of complaint in equity in the United States District Court here to restrain the Willys-Overland Company from erecting an addition to its plant in Cycledale addition, using what he claims is a method on which he holds patent rights. W. E. Woods, George S. Mills and George V. Rhines are also named as defendants. Turner says he has a patent on a method of skeleton steel concrete construction which he alleges the Overland people and other defendants used illegally in the construction of one of the Overland company's new buildings and he wants the building torn down.

Alleges Unfair Competition

Suit for alleged unfair competition has been filed in the United States District Court on behalf of the Vehicle Apron and Hood Company, of Ohio, against the National Automobile Supply Company of New York. The suit does not involve the validity of any of the patents held by the complainant or those used by the defendant company, but deals with the single element of confusion to the trade by reason of alleged similarity of the automobile goods made by the companies.

Senate Passes Metal Schedules

WASHINGTON, D. C., June 1—The metal schedules bill which originated in, and passed, the House, has passed the Senate, with amendments, and has gone back to the lower body. Its passage was made possible by the action of Republican members of the Senate absenting themselves from the floor when the vote was taken. Among those absent when the vote was taken were: Clapp, Kenyon and LaFollette, Progressives, in addition to a number of "standpat" Republicans. Enough Republicans voted, however, to make a quorum. The amendments consisted of a material reduction on pig iron and ferro-silicon, and a universal duty of \$2 per ton on print papers. The reciprocity agreement also was repealed by amendment. As the Canadian reciprocity proposition is very popular in the House, it is probable that the bill will be tied up in conference.

The duty on pig iron was reduced to 6 per cent., and that on ferro-silicon to 10 per cent. A long list of agricultural implements also are placed on the free list.

Shorten Court Procedure

Stromberg-Flechter Suit May Create a Record for Brevity Which Will Be Set Up as a Precedent

Litigants Believe that Full Hearing of the Case May Be Had in 30 Days

RECENT agitation to simplify and shorten court procedure in patent litigation has served to bring about an example in the United States District Court. It is proposed to take the testimony in the suit of Stromberg against Flechter, involving the validity of the Stromberg patent covering the two-spring carbureter principle, before the court itself.

A motion to have such an order entered by the court was made this week by Albert M. Austin, attorney for the Flechter company, and was entertained. In case this litigation is carried to a conclusion it is likely that a new record for brevity will be set.

William A. Redding, in an article published in THE AUTOMOBILE recently pointed out that one of the improvements that could be made in patent litigation would be to take testimony in court under the rules of evidence rather than by interrogatories before a notary. He cited the Selden patent litigation in which the testimony filled thirty-six large volumes, much of which he said could have been condensed without losing any material points.

It is believed by the litigants that a full hearing of the case can be had in 30 days under the rule adopted.

Indiana Company's Assets Sold

INDIANAPOLIS, IND., June 1—Frank M. Millikan, vice-president of the National City Bank, Indianapolis, has purchased through the Security Trust Company, receiver, Indianapolis, the assets of the Indiana Motor Manufacturing Company, of Franklin, Ind., which manufactures the Continental. The price paid was \$20,000, and it is reported a new company will be organized at once to continue the manufacture of the car.

New Dyer Licenses Granted

Two new individual licenses have been granted by Dyer, Dyer & Taylor, one being an individual license covering the Charron car of I. Ardin, 121 W. 126th street, and the other of licensing a Cortlandt owned by the Rapid Delivery Express Company, 363 Canal street, New York City.

ANDERSON, IND., June 1—The United States Ball Bearing Manufacturing Company has filed suit in the Madison County Circuit Court at Anderson, Ind., asking that a receiver be appointed for the De Tamble Motors Company of that city. The action is brought on an account of \$750 and it is alleged that the motor car company is in imminent danger of insolvency.

SOUTH BEND, IND., June 3—The H. Elmer property at Elkhart, Ind., has gone into the hands of a receiver on the petition of C. L. Monger, a lumber dealer of Elkhart. The receiver is to take charge of the property which was once the Elkhart Motor Car Company and later the Elmer Automobile Company and finally the H. Elmer Company. Senator Robert E. Proctor was appointed receiver.

INDIANAPOLIS, IND., June 1.—On an account of \$15, Charles B. Haines has brought suit in the superior court at Indianapolis asking that a receiver be appointed for the Indiana Tire Filler Company of that city. Haines alleges in his complaint that the company is in danger of insolvency.

COMPARATIVE EXPORTS OF AUTOMOBILES AND PARTS FOR
APRIL, 1911 AND 1912

	1911		1912	
	Number	Values	Number	Values
Automobiles, and parts of—				
Automobiles	1,433	\$1,463,336	2,238	\$2,280,199
Exported to—				
United Kingdom		204,768	579	463,560
France		77,029	104	66,683
Germany		26,072	64	46,735
Italy		43,692	21	16,181
Other Europe		114,902	169	132,093
Canada		921,242	809	1,004,638
Mexico		51,174	16	22,291
West Indies and Bermuda		32,201	43	34,415
South America		93,637	131	167,911
British Oceania		130,905	134	137,124
Asia and other Oceania		57,363	140	160,215
Other countries		33,879	28	28,353
Parts of (except tires)		323,528		446,301
Total		\$1,786,864		\$2,726,500

COMPARATIVE IMPORTS OF AUTOMOBILES AND PARTS FOR
APRIL, 1911 AND 1912

	1911		1912	
	Number	Values	Number	Values
Automobiles, and parts of—				
Automobiles	62	\$141,933	59	\$133,856
Imported from—				
United Kingdom	11	28,988	10	23,817
France	22	52,289	34	74,489
Germany	3	9,166	8	20,075
Italy	6	10,072	3	7,579
Other countries	20	41,418	4	7,896
Parts of (except tires) .....	..	47,454	..	22,031
Total automobiles and parts of .....	..	\$189,387	..	\$155,887

Lion Company May Move to Detroit

DETROIT, MICH., June 3—Local directors of the Lion Motor Car Company have returned from an inspection of the burned plant of the company at Adrian, Mich., and are now in consultation over the future plans of the company. Several of the directors favor moving the plant to Detroit and have gone so far as to secure an option on a building here. A strong effort is being made by the Adrian men interested in the plant to secure a rebuilding in that city.

The old plant is a total loss and the directors place the damage at \$400,000, of which \$180,000 is covered by insurance.

Incidental to the fire it was discovered that the Lion company had placed contracts for material for the manufacture of 2,000 cars of a lighter type than the present model and designed to sell at a greatly lower price.

Gramm Company Fully Reorganized

TOLEDO, O., June 1—The directors of the Gramm Motor Truck Company held a meeting Thursday at Lima, O., where the final reorganization of the directorate of the company was consummated. B. A. Gramm, having resigned from the vice-presidency, G. W. Bennett, vice-president of the Willys-Overland Company, was elected in his place. Following is a full list of the officers of the company: President and general manager, John N. Willys; vice-president, G. W. Bennett; secretary, James E. Kepperley; treasurer, Walter Stewart; assistant general and factory manager, Harvey L. Hooke.

Bucklens Will Manufacture Trucks

SOUTH BEND, IND., June 3—Elkhart, Ind., is assured of a new industry where motor trucks will be manufactured. This has been confirmed when Herbert E. Bucklen, Jr., admitted such a plant will be established by his father, Herbert E. Bucklen, Sr., and himself. The institution is to be known as the Bucklen Auto-Truck Manufacturing Company, with headquarters in Chicago and Elkhart. Five different models of trucks are to be manufactured. These will include delivery trucks, draying trucks, and similar motor-propelled vehicles for freight and express. The smallest of the models will be made to carry 1,000 pounds, while the largest will have a capacity of 5 tons.

Merger Rumors Fill Air

Meetings of Industry Captains in New York Bring Forth Many Wild Yarns as to Combinations

Inquiry Fails to Reveal Anything Tangible, but Stories Will Not Down

THE silly season opened in full strength this week in New York and the superheated atmosphere was filled with rumors affecting the automobile industry, any one of which would be revolutionary if it happened to contain certain necessary elements of truth. Mergers of all kinds and descriptions were floated in a purely conversational way. But they were certainly big ones and some of them may have an underlying stratum containing some facts. Representatives of nearly all the big companies are in New York at present and each one has some sort of a story to tell about trade estimations.

Briefly, and without the slightest acceptance of responsibility, the chief rumors floated just now are as follows:

1—A merger of the Studebaker Corporation and the United States Motor Company. Truth denied by officers of both companies and asserted in a guarded way by a few competitors.

2—A combination of the Metzger, Marmon and Overland. Denied by everybody interested but industriously circulated by certain New York parties.

3—The purchase of Lozier, Metzger and Universal truck by the Ford Motor Company. It appears that Mr. Ford recently inspected the Lozier plant and is said to have bought a Lozier car.

4—An amalgamation of the truck companies of Cleveland and Buffalo with the Metzger company. (Laughter and applause.)

5—Still another momentous merger rumor makes a huge combination consisting of Ford, Lozier, Overland, Marion, Henderson, Garford and Gramm. (Same as No. 3.)

Automobile Securities Quotations

Stock trading, as far as the automobile industry is concerned, partook of the characteristics of the general market. The recent upward movement of United States Motor Company common flattened out on a series of small deals and the price sagged back 3 full points since last week. The rubber shares were quiet, with sellers in majority. The comparative prices were as follows:

	1911		1912	
	Bid	Asked	Bid	Asked
Ajax Grieb Rubber Co., com.....	110	120		
Ajax-Grieb Rubber Co., pfd.....	90	100		
Aluminum Castings, preferred.....	100	102		
American Locomotive, common.....	41 3/4	42 1/4	40 3/4	41
American Locomotive, preferred.....	108 1/2	109	107	108
Chalmers Motor Company.....	140	160		
Consolidated R. T. Co., common.....	4	5	16 1/4	18 1/4
Consolidated R. T. Co., pfd.....	15	25	55	59
Diamond Rubber Company.....	270	273	380	383
Firestone Tire & Rubber Co., com.....	167	170	268	272
Firestone Tire & Rubber Co., pfd.....	103	105	106 1/4	107 1/4
Garford Company, preferred.....	99 1/2	100 1/2		
General Motors Co., common.....	40	41	34	35
General Motors Co., preferred.....	80	81	73	75
B. F. Goodrich Co., common.....	240	245	82 1/4	83 1/4
B. F. Goodrich Co., preferred.....	113	115	108 1/4	108 3/4
Goodyear Tire & Rubber Co., com.....	218	221	270	273
Goodyear Tire & Rubber Co., pfd.....	101	102	100	105
Hayes Manufacturing Co.....	103			
International Motor Co., com.....	28	32		
International Motor Co., pfd.....	90	94		
Lozier Motor Company.....	45	55		
Miller Rubber Company.....	160	163		
Packard Motor Co., preferred.....	104 1/4	106 1/4		
Peerless Motor Company.....	55	57	29	30
Pope Manufacturing Co., com.....	75	77	74 1/4	75 1/4
Pope Manufacturing Co., pfd.....	10	10	9	10 1/4
Reo Motor Truck Company.....	23	25	24	24 1/4
Studebaker Company, common.....	38 1/4	40		
Studebaker Company, preferred.....	96	98		
Swinehart Tire Company.....	106	107		
Rubber Goods Company, common.....	85	87 1/4	100	
Rubber Goods Company, preferred.....	100	103	105	110
U. S. Motor Co., common.....	38	39	6 1/4	7 1/4
U. S. Motor Co., preferred.....	80	81	26	27
White Company, preferred.....	108	110		

Arranges Show Circuit

**N.A.A.M. Decides on Plan to Avoid
Conflicting Dates, Save Long Jumps
and Reduce Expense**

AN even dozen cities are included in the circuit of shows which will initiate the automobile season of 1913, according to a plan announced by the National Association of Automobile Manufacturers Tuesday afternoon. The circuit has been arranged to eliminate conflict of dates and is so framed that if manufacturers wish to assist their local representatives by the loaning of polished chassis, salesmen or exhibition cars they may do so without making excessively long jumps.

The idea is to cut out all participation by manufacturers in any other shows than those included in the circuit and to allow such manufacturers only the same degree of latitude in exhibiting at the circuit shows as they have at present with regard to all local shows.

The heavy drain of past seasons on the manufacturers is one of the chief reasons for abridging their activity. The circuit project will be presented to the Motor and Accessory Manufacturers and it is likely that similar action will be taken by that organization. The accessory makers, as such, have also felt the drain of the long local show season.

The circuit, showing cities and dates (including the New York and Chicago shows, which are not part of the local show circuit), is as follows:

Cleveland	January 4-11	Kansas City	February 17-22
New York	January 11-18	St. Louis	February 24-March 1
Philadelphia	January 20-25	Pittsburgh	March 3-8
Detroit	January 27-February 1	Boston	March 8-15
Chicago	February 1-8	Buffalo	March 17-22
Minneapolis	February 10-15	Indianapolis	March 24-29

All the shows except New York, Chicago and Boston commence on Monday night.

New York Orphans' Outing

Yesterday was Orphans' Day in New York. Fully 4,000 children were taken to Steeplechase Park, Coney Island, the occasion being the eighth annual anniversary play-day under the auspices of the Orphans' Automobile Day Association of New York. Eighty commercial vehicles and 115 pleasure cars conveyed the orphans to and from the Island.

Senator W. J. Morgan was chief marshal of the day, his assistants being Col. K. C. Pardee and Charles Dieges. Mrs. J. D. Smith, president of the Orphans' Automobile Day Association, was assisted in caring for the children by a number of women volunteers and heads of institutions.

The parade was formed in two sections, the head of the first being made up on the north side of 78th street facing Broadway, and the other on the north side of 17th street, facing Fifth avenue. Section 1, which was headed by Police Commissioner Waldo, proceeded to Washington Square at 17th street, where section 2 joined it. From here the complete parade wended its way down through Manhattan, across the Williamsburg Bridge and thence to Coney Island.

On their arrival at Coney, the children and their escorts were conducted to the Kaiser Garten Park, where they had luncheon as the guests of Peter Doelger, the well-known brewer. Luncheon over, the youngsters were taken to Steeplechase Park, at the invitation of George C. Tilyou.

Among the various institutions which were represented at the outing were the thirteen schools of the Children's Aid Society, Society for the Relief of Half Orphans and Destitute Children, Charity Organization Society, Leake Watts Orphanage, German Odd Fellows, Sunshine Society, Howard Mission, Home for Little Wanderers, Five Points Mission and Presentation Day Nursery. In addition, fifty crippled children participated.

Truck Makers in Session

**Uniform Guarantee Recommended, with
90-Day Limit—82 Makers Have
Sold 18,000 Vehicles**

THE second truck convention was held Tuesday at the headquarters of the National Association of Automobile Manufacturers. There were present twenty-two representatives of various elements of the automobile truck manufacturing industry. The chief work of the convention was the recommendation to the N. A. A. M. of the uniform guarantee framed at the last meeting of the organization. This was recommended practically as it was made up in its original form but the clauses were rearranged. The form of guarantee recommended includes a 90-day limit, provides for replacements only where defect of workmanship or material is discovered within that limit and separates the warranties of replacement from the contract of sale.

The convention also recommended to the N. A. A. M. that a warning plate be authorized for every truck turned out. These plates, according to the form suggested, will contain the size designation of the truck, the chassis weight, body allowance, useful load weight, total loaded weight and rated speed. The caption will read: "Caution; overloading and overspeeding will void your warranty."

The committee on production and sale made an interesting report showing that up to January 1, 1912, eighty-two manufacturing companies had made and sold something over 18,000 trucks of various types and styles. This is believed to represent about two-thirds of the total of about 27,000 trucks. The report stated that this fraction of the total number of trucks put out by American manufacturers is valued at \$35,000,000.

The matter of insurance was discussed informally and the recent series of articles appearing in THE AUTOMOBILE on the subject was referred to in placing an investigation of the whole subject in the hands of James S. Marvin, assistant general manager of the N. A. A. M., for examination and report.

Prior to the assembly of the convention, the executive committee held a session in conjunction with H. F. Donaldson, Coker F. Clarkson and W. P. Kennedy, of the Society of Automobile Engineers. It was agreed at this session that it should be recommended to the association that the manufacturers should take up the things that have to do with the selling and use of trucks and that the S. A. E. would co-operate on the standardization of units. The convention adjourned to meet again November 7.

Firestone Common Offered at \$250

AKRON, O., June 1—The Firestone Tire & Rubber Company, of Akron, O., is offering for sale the balance of the common stock in the treasury at \$250 per share. Shareholders are given the preference in subscribing for the stock at the rate of 10 per cent. of their present holdings. The provision is made that the stock can be paid for at the rate of 25 per cent. June 1; 25 per cent. on June 29 and 50 per cent. July 20. Receipts will be issued for fractional parts of shares, but they will not participate in the dividends, but will be redeemable between August 15 and September 1 at the rate of \$262.50 for a full share.

ALBANY, N. Y., June 5—The B. F. Goodrich company has certified to an increase in its capital stock from \$45,000,000 to \$90,000,000. The issues are divided into \$30,000,000 preferred and \$60,000,000 common.

C. F. Redden, for 5 years the New York sales representative of the Studebaker line, has resigned to take the eastern sales managership of the Metzger Motor Car Company. Mr. Redden's territory will include New York and New England.

Reorganizing Studebaker

Pettit Succeeds Pelletier, Gordon Replaces Adams—Metzger Company May Get Studebaker Dealers

DETROIT, MICH., June 3—The reorganization of several departments of the Studebaker Corporation's automobile division and the Metzger Motor Car Company, has been a fertile theme for gossip here for several days. The latest development is an announcement by general manager J. N. Gunn, of the Studebaker forces, stating that E. LeRoy Pelletier has been relieved of his duties as advertising director and is no longer connected with the firm. This department is now in charge of W. S. Pettit, who has been with the Studebakers for a year and a half. It is generally believed that Mr. Pettit will replace Mr. Pelletier in charge of the display advertising of E-M-F and Flanders cars. Pelletier has not been active with the Studebaker interests for several weeks and is understood to be in charge of the Metzger company's advertising, although no formal announcement to that effect is at hand.

Mr. Gunn also announces the appointment of Charles Gordon as factory manager, replacing Charles Adams who has been with the Studebakers for several years, coming from Port Huron where he had charge of the plant in which the rear axles for the Studebaker cars are made.

It is believed that the Metzger company, through Mr. Pelletier and Paul Smith, the former Studebaker sales manager, will make a vigorous campaign to secure for the concern a large number of the Studebaker dealers, as soon as the company's plants are in shape to materially increase the output, which, up-to-date, has always been a conservative one. This belief is strengthened by the fact that President Barney Everitt of the Metzger company has just bought the abandoned plant of the Detroit Motor Boat Club, near the waterworks, giving for it over \$10,000.

The Metzger company has secured a number of the former Studebaker branch managers, all of whom have been promptly replaced. As yet the Studebaker people say they have not lost a dealer to the Smith campaign, and claim that there are features of the effort which have greatly strengthened them in the esteem of their distributors.

Although Walter E. Flanders has not yet allied himself with the Metzger company, he has practically turned over his office to Mr. Gunn and has been devoting a large share of attention to his Pontiac enterprises.

Ford Company May Reduce Car Price

DETROIT, MICH., June 3—An apparently well authenticated rumor has it that the Ford company intends to make a cut in the price of its car in the near future. This is firmly believed by the other Detroit manufacturers. The impending move does not, however, create more than a ripple on trade conditions. Local manufacturers have for some time laid their plans in a way that left out of consideration all competition with the output of this plant. The year's developments have shown that the Ford has virtually made a class for itself and other manufacturers have increased either the power or changed the style of their cars in a way that has removed them from the Ford's field.

Considerably more attention is being paid to the report that the Dodge Brothers Company, which, for a long time, built the Ford motors, would market a car in 1913, to be retailed from Ford agencies. This car is understood to be a six-cylinder affair at a moderate price, though considerably more expensive than the Ford. Experimental models are said to be running at present.

That the Dodges contemplate entering the manufacturing field is generally admitted. Their long business association with the Ford interests lends strength to this rumor.

Dates Set for Big Races

Vanderbilt to Be Run September 17 and Grand Prize Event 4 Days Later—Greenfield Course Selected

MILWAUKEE, WIS., June 5—The ninth race for the Vanderbilt Cup will be run at Milwaukee, Wis., on Tuesday, September 17, and the fourth renewal of the international classic, the race for the Automobile Club of America's gold cup, the Grand Prix, will be decided over the same course on Saturday, September 21. The first contest for the Pabst Blue Ribbon trophy, a \$10,000 gold cup donated by Col. Gustave Pabst, millionaire Milwaukee brewer, will be run co-incidentally with the Vanderbilt, and the initial race for the Wisconsin Motor trophy, a \$2,500 cup donated by the Wisconsin Motor Manufacturing Company, of Milwaukee, will be run with the Grand Prix.

The dates were decided upon following a conference between representatives of the Milwaukee Automobile Dealers' Association and William Schimpf, chairman of the contest board of the A. A. A., at Indianapolis on Memorial Day. The course selected by the M. A. D. A. was also approved, subject to further viewing by the A. A. A. representatives and approval by the A. C. A.

The Greenfield course, which has been selected for the running of the classics, will when reconstructed, measure 8.7412 miles, according to the official survey made yesterday by William Hughes, official surveyor. The roads comprising the course at present measure about 9.9 miles, but by cutting away sharp turns and otherwise improving the course, the distance around the circuit in the center of the highway will be exactly 8.7412 miles.

The Vanderbilt will thus be either 33 or 35 circuits of the course, 288.2 or 304.6 miles; the Grand Prix, forty-five or forty-seven circuits, 393.75 or 410 miles. It has been decided to make the Pabst Blue Ribbon contest 225 miles and the Wisconsin Motor Trophy 175 miles, or as nearly this figure as possible.

Ideal Company Is Reorganized

INDIANAPOLIS, IND., June 4—The Ideal Motor Car Company, manufacturer of Stutz cars, has been reorganized. E. G. Sourbier has retired from the position of treasurer of the company, having disposed of his stock to H. F. Campbell, president of the Stutz Auto Parts Company, who is one of the principal stockholders in the Ideal company and president of the board of directors. Mr. Campbell retires from the presidency of the Ideal company to fill the position of treasurer and Harry Stutz, factory manager and designer, has been elected president of the company and has been made a director. J. H. Ebersole, of Washington, D. C., will come to Indianapolis to take an active part in the affairs of the company in the capacity of secretary. Carl G. Fisher is organizing a company to take the Indiana agency for the Stutz and Packard. Frank L. Moore will be associated with him in the enterprise.

U. S. Rubber Capital Increase

Stockholders of the United States Rubber Company have informally approved the plan suggested by President Samuel P. Colt to increase the capitalization of the company from \$75,000,000 to \$120,000,000 and including the retirement of \$10,000,000 of the second preferred, the issue of a like amount of first preferred and a common stock dividend of \$5,000,000.

The expected opposition did not develop much strength and the action of the stockholders will be presented to a special meeting which will be called in the near future for ratification.

President Colt said that only \$10,000,000 of additional capital was needed at present, and that the increase of the stock issues by \$45,000,000 was only to provide for future development.

Harding's Fletcher Cup

Driving a Cadillac, He Captures First Honors in the Ninth Annual Club Contest at Philadelphia

Wolverines Not Greatly Excited Over Decision to Start Glidden from Detroit

PHILADELPHIA, June 3—Favored by weather and road conditions bordering on the ideal, eleven contestants motored over a course of approximately 65 miles through Philadelphia and suburban towns on Saturday last in the annual contest of the Automobile Club of Philadelphia for the Fletcher Cup.

W. S. Harding, driving a Cadillac, captured a leg on the trophy by finishing with the least number of points penalization, 12 3/4, as against 14 1/3 points for E. C. B. Fletcher, driving a Packard, who was second, and 15 points scored against Charles Moller, Stearns-Knight, third. Some idea of the closeness of the contest can be gleaned from the fact that a margin of only 2 1/4 points separated first and third places.

The Fletcher Cup contest is a continuation of the Brazier Cross-country Challenge Cup run, originated by H. Bartol Brazier in 1903. G. B. Fletcher won the cup in 1905, 1908 and 1909, which gave him permanent possession of the Brazier cup and he then offered a similarly designed cup for competition. During the first four years of the event it was a speed and endurance race, but since 1906 it has been a legal speed limit run, conforming to local speed regulations of the sections traversed.

The contestants and the order in which they finished were:

Name	Car	Pts. Penalization
W. S. Harding	Cadillac	12 3/4
E. C. B. Fletcher	Packard	14 1/3
Charles Moller	Stearns-Knight	15
Alan Corson	Buick	20 1/2
G. W. D. Fletcher	Buick	25 1/2
P. M. Elasser	Lozier	26
A. J. King	Columbia-Knight	32 1/4
Henry Fallow	Case	38 1/4
S. Walter Harper	Case	92
F. M. Mitchell	Marmion	153

Detroit Apathetic Regarding Tour

DETROIT, MICH., June 3—The semi-official news that the National American Automobile Association tour of 1912 would be started from Detroit failed to create a ripple of excitement here—a fact which may, to a certain extent, perhaps, be accounted for by the late start of the tour and its present remoteness. Just why, in view of the city's apathy to the tour, the authorities in New York decided on Detroit as a starting point is not yet clear. In all probability, the responsibility of entertaining the Gliddenites will fall on the Detroit Board of Commerce. The Cartecar Company, of Pontiac, is the only one of the Detroit group of factories which has seemed interested in the tour as yet, having given a tentative promise of entries. As the tour, according to its local interpretation, is intended to appeal more to private owners, however, few factory entries will be expected.

Mixed Race Meet at Bennings

WASHINGTON, D. C., May 30—Memorial Day was celebrated at Bennings track by a mixed race meeting in which both motorcycles and automobiles figured. The meeting was promoted by the National Capital Motorcycle Club and was supervised by T. B. Shoemaker, of the Contest Board of A. A. A. While there were only three automobile events carded there was plenty of excitement for the 7,000 spectators as two of the finishes were close. In the 230-inch class, Everitt No. 7 won in an eyelash finish. Warren No. 1, the same car that holds the 5- and 10-mile straightaway records, took the cup in the second

event by a small margin, and a Cole car, No. 5, was the only survivor in the free-for-all at 20 miles.

In the free-for-all the Cole slipped its low-speed gear at the start and lost half a lap, but eventually caught the Warren about midway of the race and finished all alone after misfortune had stopped each of its rivals.

The time was slow, but the track was safe and comparatively free from dust. The summary:

Class E. 230 cubic inches. 10 miles			
No.	Car	Driver	Time
7	Everitt	R. L. Miller	15:30
4	Reo	F. G. Stewart	15:32
3	Ford	W. L. Frazier	Out 2nd lap
2	Warren	W. H. Kessler	Flagged

Class E. 600 cubic inches. 10 miles			
1	Warren	I. C. Barber	15:05
2	Warren	W. H. Kessler	15:17
5	Cole	C. C. Campbell	Broke pinion
7	Everitt	R. L. Miller	Out 2nd lap

Free-for-all. 20 miles			
5	Cole	C. C. Campbell	28:51 3/5
1	Warren	I. C. Barber	Out 19th lap
2	Warren	W. H. Kessler	Out 16th lap
4	Reo	F. G. Stewart	Out 6th lap; frozen piston
3	Ford	W. L. Frazier	Out 3rd lap; frozen piston
6	Independence	R. De Neale	Disqualified

N. A. A. M. and A. B. of T. Meet

Regular monthly meetings of the National Association of Automobile Manufacturers and the Automobile Board of Trade were held Wednesday. Action was taken to ratify the show circuit dates and plans and other work of sub-committees. There was a small attendance of the Automobile Board of Trade organization and a fair number of the N. A. A. M.

In the evening a dinner is scheduled at the Metropolitan Club, where Ernest H. Greenwood, of the Manufacturers and Dealers' Motor Fire Insurance Company and the Manufacturers and Dealers' Motor Casualty Company, will be host to about thirty of the automobile men.

S. A. E. Convention on Shipboard

Sessions of the Society of Automobile Engineers at the semi-annual convention of that organization at Detroit will be held on board the steamer City of Detroit instead of in a hall.

The plan that has been presented to the members is for a marine convention. The steamer has been chartered to leave Detroit with the society and guests aboard at 8 o'clock Thursday evening, June 27, and a course nor by west, half west, has been arranged that will land the ship at Mackinac Island and back again by Saturday evening.

Prior to the embarkation one professional session will be held on Thursday at the Hotel Pontchartrain, and in the afternoon some of the Detroit factories will be inspected.

Smith Reads Paper Before S. A. E.

A paper which aroused considerable interest was read by H. H. Smith, electrical engineer of the Edison laboratory, before the Metropolitan Section of the Society of Automobile Engineers at their new meeting place in the United States Rubber Building. The paper dealt exclusively with the manufacture of the Edison storage battery. Lantern slides showing the tubes, grids, etc., in the various stages of construction illumined the paper, while reproductions of charging and service curves under various circumstances were also reproduced.

The questions put to Mr. Smith after the paper had been read brought out the interesting work which is being conducted in the Edison laboratories. The most important result in the improvement of the battery which has been made lately is the insulating and protective paint which preserves the can containing the battery. This was formerly subject to corrosion, and the results were serious if this progressed to a marked extent.

Paint and Finish for 1913

Keeping Pace with the General Improvement, the Outer Dress of the Car Will Shine Forth Resplendent

Dark Blues, Greens and Maroons Rule Favorites, With Battleship Gray Prominent

IT is not too early to forecast some of the features which are to materially assist in making the 1913 car not only a good seller, but the best seller, and, in addition, an exceptionally fine car to own. Not a few of these features are to be developed by the automobile painter, who appears to be playing an important part in the history of the motor car.

Whatever mechanical improvements, and whatever grace of fashion superior to that which has gone before, are to be found in the 1913 car, this one thing is assured: namely, a demand for a grade of painting and finishing that will give the car a fairer and finer appearance than any of its predecessors.

To measure up to these requirements plans are already under way in the automobile paint shops which will enable the painting departments to fully meet expectations. In the first place, there will, if possible, be an improvement in the quality of the surfacing put upon the car. There is always a chance for improvement, and for the 1913 car the chance is to be taken. By virtue of this the car marketed next year will in all probability have cast upon it a surface distinctly superior to that of cars now being sold.

The question may here be raised, How can these things be? First, to insure for the car of next year superior surfacing we must have the use of a superior grade of materials. This, of course, means that paint and varnish supplies must cost more than at present. It does not necessarily mean that by this increased cost of paint materials an increased cost of production is to follow. It does mean, however, that with superior materials a superior grade of painting and finishing must result with greater dimensions of surface covered, gallon for gallon, than formerly.

Automobile painting and finishing have been cursed with an enormous consumption of poor paints, colors and varnishes, and the effect has been to cheapen the finish and hasten the wear and the ultimate collapse of the surface. In respect to the finish to be applied to the 1913 car, events which have transpired during the past twelvemonth furnish the warrant for believing that in its capacity for standing up rich and beautiful under the harsh service commonly visited upon the car the painter's work is destined to outclass anything he has previously done.

Priming Coat Must Be Elastic

It has come to be a fully recognized fact that the priming coat, whether upon wood or metal, must be endowed with sufficient elasticity to not only hold it securely in place but to likewise securely hold the coats of material placed directly over it in their proper and appointed places. And while this need of elasticity is understood clearly, it is equally well understood that to meet latter-day requirements the primer must dry promptly—faster, in fact, than some of the so-called impregnable first coats of earlier years.

The drying or baking ovens are more and more contributing to this result and it is almost certain that these ovens are to be very largely used in the painting and finishing of the 1913 automobile.

However, in case the drying oven is not used, the priming coat, by virtue of the ingredients it contains and the method of uniting them, is sure to cure out and dry sooner than formerly, without injury to the durability of the finish.

Surfacing coats, technically termed roughstuff, is being more largely used direct from the paint grinder and manufacturer, and this practice is serving to provide the painter with a surfacing medium more uniform in composition and somewhat more dependable in other respects than the shop-mixed roughstuff.

The custom in vogue, when the roughstuff is shop-mixed, of tossing odds and ends into the mixing pot and stirring them all together, will not do for modern automobile painting. Something more definite is demanded.

In the matter of rubbing these surfacing coats down to a level and smooth condition, better and finer work is now being done than ever before, and this quality will be improved upon during next year.

Contributing to this end the men engaged in putting the roughstuff coats in place upon the surface are being instructed to use increased care and skill. Coats are to be laid smoother and cleaner, thus reducing the labor of rubbing and making more certain the finish of faultless form.

Colors for the 1913 car, it is violating no confidence to say, are, if anything, to be even darker and richer than those of this year. A recent foraging trip along the automobile row of one of our large cities and a look through the principal showrooms convinced the writer that the tendency for a continued employment of the dark, beautiful toned colors is well defined.

Blue, Green and Maroon Still Favored

Visiting some leading automobile paintshops serves to confirm this evident tendency, for here one finds a determination to get away from anything and everything that savors of loud, garish, bill-color-poster fashion. Dark, stately, radiant-toned colors are being developed and wrought out into their most striking effects.

While what are known as house colors—that is to say, the shades of blue, green or maroon selected by the automobile manufacturer and given a name to represent his individual preference in the matter—are to remain largely in evidence, we are likewise justified in expecting that the leading color manufacturers will put out for the coming year many new and attractive shades of the now popular colors.

Apparently, the various brown pigments have passed over the crest of popularity and are on the wane. Creams and yellows are to be seen to some extent, but the general public does not take kindly to them, and their use is more than likely to be largely restricted to the car owner determined to have something strikingly unlike his neighbor.

Grays, especially the cool, quiet toned ones—the battleship gray type, for instance—are sure to thrive in popular esteem. The grays are durable pigments, and show dirt and the evidences of road service quite the least of all the colors.

The dark blues, greens and maroons are, however, the *pièce de résistance* for automobile colors destined to live on in public favor for years without number. They are unapproached and unapproachable, and for the finest type of car are distinctly in a class by themselves. These colors as shown upon the 1913 cars of the best class are just now being worked upon by the color experts with the view of giving them an increased depth and volume of lustre.

The lakes are members of a family of pigments that within the last 5 years have come into an immense popularity. Munich, purple, crimson, carmine and scarlet lake, both American and English, are now being bought in 50-pound lots by the automobile manufacturers, whereas a few years ago all such pigments were looked upon as too costly for car work. They are strictly glazing colors, which over proper grounds display rare beauty.

They require ample varnish protection, and when given this, wear most durably. They are colors, moreover, that do not require much, if any, striping or ornamental lines to make them effective, and when such lining work is applied it should be cast in quiet, subdued shades. This striping is intended to enrich the field color, and in no respect should it be reduced to the mere service of concealing surface defects.

Motor Post-Hole Digger

Novel Tool, Mounted on 3-Ton Mack Chassis Which Plants a Telegraph Pole in 15 Minutes

Two Men Can Easily Handle the Outfit—Description of Its Operation

DIGGING post-holes for telephone and telegraph poles in 15 minutes is now an accomplished fact. The International Motor Company has placed upon the market a digger attached to a Mack 3-ton chassis which can accomplish the work in the time stated. When used in connection with the derrick also fitted to this truck the work of digging holes and planting the posts can be accomplished with remarkable celerity. The truck is merely backed up to the curb or wherever the telephone, telegraph or electric transmission line is to be constructed, and the device digs a hole 7 feet deep, then hoists the pole and places it in the hole.

The platform of the standard 3-ton chassis has been reinforced with a transverse I-beam which passes across the rear end of the platform. This beam supports the boom of the derrick. The boom is a double A-shaped member and is hence attached at the bottom end to the cross-beam in two places. The upper end of the boom members come together, forming the top of the boom. In order that the boom cannot be lifted too far back a secondary structure is placed further forward on the truck. This consists of a tripod carrying a cross-beam at the top which acts as a stop for the boom. This stop comes into play when the boom is about upright. The tripod also carries the pulley which guides the rope from the winch drum to the top of the boom.

The winch is the most interesting part of the hoisting apparatus. The power used in driving the winch comes from the motor itself, the drive being taken directly from the gearset.

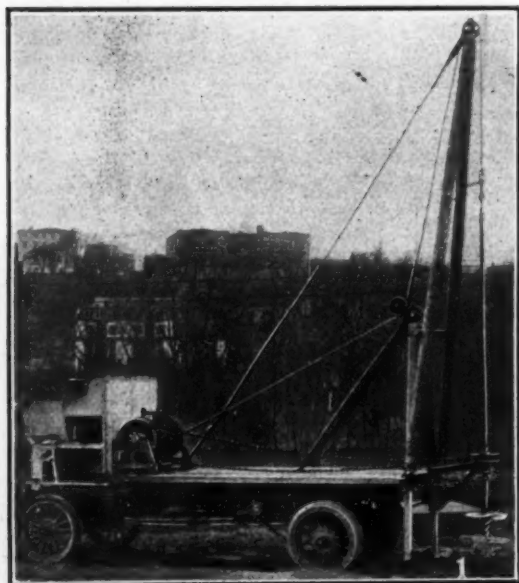
An auxiliary shaft runs longitudinally from the gearset forward. At each end of this short shaft there is a worm. The rear worm meshes with either the first speed gear or the inverse gear. This gives the winch one forward and one reverse speed. The drive of the winch passes up through the worm on the forward end of the short shaft through a train of reducing gears to the main winch drum. On the same shaft as one of the intermediate gears a niggerhead or small drum is carried for the purpose of hauling heavy loads which might be too much for the larger drum on account of its larger diameter and hence lesser leverage, the weight being carried further from the axis.

The layout of the deck of the truck is economical in that very little available storage space is used. The rear end of the rectangular platform carries the derrick and post-hole cutter, the center is empty, while the front end against the driver's seat is utilized by the winch. When the cutter is in operation the platform is clear, the cutter being supported by a bracket which projects out from behind the truck proper.

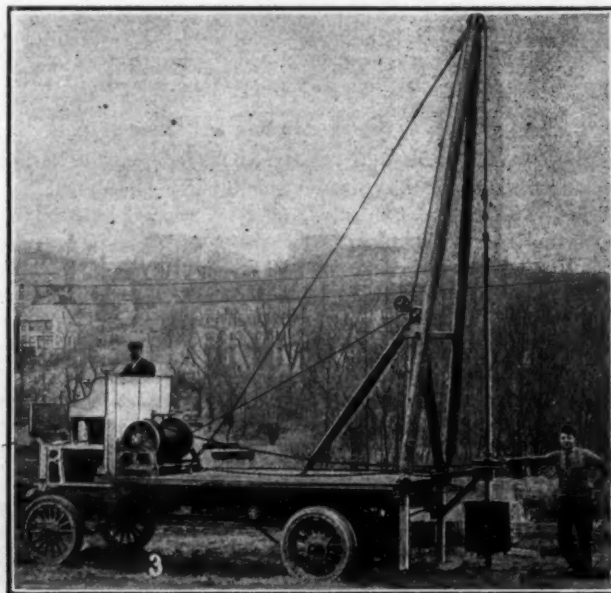
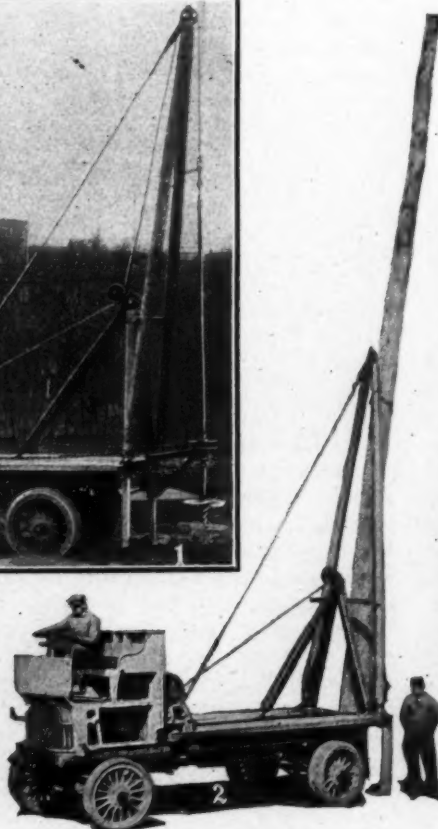
The motor used in connection with this truck with the winch, derrick and cutter attachments is the same as that used with all Mack 3-ton trucks. It is of the four-cylinder, four-cycle, vertical type with a 5 1/2-inch bore and 6-inch stroke. The cylinders are contained in two monoblock fastenings. The inlet and exhaust valves are on the same side of the motor and are of the same size, hence being interchangeable. The motor is lubricated by a force-feed mechanical oiler which pumps the oil through the hollow crankshaft to each cylinder. The ignition used is the Bosch high-tension double system.

Device Saves Time and Money

The post-hole digger is an interesting modification of the carpenter's expansion drill. The part which first enters the earth is about 1 foot in length and looks very much like an exaggerated wood screw. Above this is a spiral disk, the leading edge of which is serrated, giving a saw-like action and throwing the earth above it as the digger enters the ground. When the hole has been dug this disk supports the core of dirt while the digger is lifted from the ground and, as a result, leaves a smooth, perfectly round hole which does not have to be more than an inch or two larger than the diameter of the pole. The digger is fed in very much the same manner as the ordinary automatic feed drill press. A pulley with a threaded center is turned by means of an endless chain which passes around this pulley wheel and the large drum of the winch. Through the center of the pulley passes the feed shaft of the digger, this shaft being really a slow-pitched worm, while the pulley corresponds to a nut. The nut is rotated about its axis, but is not free to move in a direc-



1—Telegraph post-hole digger ready for operation
2—Lowering the post into the hole
3—Lifting core of dirt out of the hole



tion parallel to it, as it is fixed to the bracket that carries the digger. When it is desired to start to dig the hole, the clutch is taken out, the lever thrown in so that the shaft with the two worms engages with the lowest ahead gear, and the clutch is let in. This starts the digger to work. When the hole has been dug the direction of the feed is reversed by putting the gear-shift in reverse. This reverses the direction of rotation of the winch drum and hence the feed pulley on the digger.

The outfit should prove a money saver on account of the speed at which it works and the amount of labor it saves. With the truck two men can dig a hole in 10 minutes and in a few minutes more, by the aid of the derrick, swing the largest and heaviest poles into place, lower them into the holes and tamp the earth around them. It formerly required a day for two men to dig four post-holes and these had to be followed by a large gang who hoisted the pole into position with the aid of neighboring trees, if there were any, or, if not, by the use of long pike poles. The Mack post-hole digger hauls the poles to the spot required, digs the holes and swings them into place. The derrick is 21 feet 8 inches in height and can handle the largest poles because it is only necessary for the derrick to catch them at the center as the lower end is much heavier than the upper. The digger has been tested out by the Bell Telephone Company of Philadelphia and has been found highly satisfactory.

This type of truck without the digger attachment has been used successfully in handling the large drums of lead-covered cable. Larger drums than ordinarily employed can be taken care of by a motor truck which can use the power of the motor for jockeying the unwieldy bulks into the required position.

Solons Fail to Agree on Motor Bill

Boston, Mass., May 25—There will be no hostile legislation to rule motor trucks off the Massachusetts highways or to increase the fees for motor cars at the present session of the legislature, thanks to the publicity that has been given to the manner in which the Committee on Roads and Bridges has been trying to force something into the present session of the legislature. The bill seeking to increase the fees was twice sent to the Senate and twice re-committed back to the committee. The bill aimed at the trucks was passed in and out once. Now that the committee cannot agree to get anything by, and having apparently heard from their constituents and also fellow-members of the legislature, the committee did the usual thing in such cases, put in a resolution for a recess committee, not wishing to report no legislation necessary, as that would admit defeat. Besides, a recess committee is a nice snap whereby several members meet occasionally in the summer, draw up a report, and draw down a bunch of money for salary and expenses.

This will have to pass both branches of the legislature, and some of the members have stated that it may not pass, thereby killing the entire matter. It is being generally recognized now that the motor industry is a big factor in the welfare of the state and that the large army of employees may be welded into a potential force, so experienced members of the legislature are not going to find themselves picking up a stick with pitch on it. As a matter of fact, there is no need of any recess committee, as the entire motor legislation could be threshed out in a couple of sittings.

If a recess committee is appointed the seven members will, doubtless, be taken from the Roads and Bridges committee, yet it might be better to get unbiased members to handle the subject.

SALVADOR REDUCES CAR TARIFF—The report of the Minister of the Treasury and of Public Credit, in a review of the tariff changes during the year of 1911, records a reduction in the "aforo" on automobiles from 10 centavos to 5 centavos per kilo. The duty, calculated on that figure, including surtaxes, amounts to about 5 cents per pound.

Car Upholstery Leather

F. R. Humpage Gives Details of the Various Processes Through Which It Goes Before Ready for Use

Method of Finishing Spanish Leather Was an Accidental Discovery

BUFFALO, N. Y., May 25.—The process of the manufacture of leather from the hide of the living steer until it passes the final step in the upholstery of a modern automobile is a long one, and little understood by many car owners.

In the first place the best leather is usually made from imported hides. These hides are carefully selected, the American leather manufacturer usually going abroad for his raw material, because in France and in other European countries cattle are permitted to attain a fuller growth and a larger percentage of clearer hides is usually obtained than would be the case in America. That is to say, imported hides are not scarred by barbed wire fences or by the branding iron.

As an illustration of the costly process the best leather goes through after the hide is shipped into this country, it is only necessary to take into consideration the numerous treatments leather must undergo before it becomes a finished product. The first step in its preparation is to remove the hair and any adhering particles of flesh. This green leather must be preserved by the curing process, otherwise decay would set in and the hide become unfit for any practical use. In order to properly preserve it, the hide is covered over with the bark of chestnut or oak, preferably the latter, the bark itself being used in preference to a liquor extract made from the bark on account of the former containing a larger percentage of tannic acid, which is the preserving agent. This tanning process usually lasts about 3 weeks. When taken from the tanning vats the hide is usually 1-2 inch thick and is separated into two, three or four cuts, of which the uppermost layer, or that taken just under the hair, is the most valuable. This part of the hide contains the grain which penetrates to a depth of about 1-32 inch and to which the wearing qualities of the leather are due, and is found only in higher grades of hand-buffed leather which, for that reason, is more expensive and is preferred to the machine-buffed variety. The first named contains all of the grain, whereas in the machine-buffed a part of the grain is sliced away, thereby lessening the wearing qualities to a considerable extent. Leathers are usually finished in four well-known grains, namely: smooth or patent, long or English, pebble or French grain, and natural or Spanish grain. The first three of these grains are worked up after the leather has been painted. The Spanish grain leather is practically a non-conductor of heat and as such is especially valuable on cars used in warmer climates, or in places where the passengers are susceptible to heat. This grain may be either worked up after painting or is effected during the tanning period. It is interesting to know that the Spanish grain was first manufactured by accident several years ago, and when the leather was taken from the vats it was supposed that it would be useless for any practical purposes, this first batch of leather being thrown aside and absolutely disregarded for a matter of a year or more when it was decided that owing to the natural grain presented it would become popular for ornamental purposes. With ordinary care and attention the highest grade leather will last for a great many years and when soiled the best way of cleaning it is with pure soap and water. Painted leather is more or less impervious to any kind of weather, excepting extremely cold weather, which is likely to cause the leather to crack, but otherwise the painted surface serves to keep the moisture out from the inside, and to prevent possible deterioration from that source.

Digest of the Leading Foreign Journals

Many Reasons Why Automatic Timing of Ignition Should Be Supplemented With Reserve Control by Hand—Interesting Features in New German Cars for Peace and War—Graphite Accused of Coagulation

DRAWBACKS of Automatic Timing—Under some circumstances ignition should be timed for special rather than normal effects and automatic timing based on the normal requirements is in such cases inconvenient. For example, we ascend a long hill on a hot day and, with the normal timing, the cooling water begins to boil. We may not be able to get over the hill. If we have hand-adjustment of the spark, we now advance the spark till the motor just begins to knock, and at the same time we reduce the gasoline feed—the richness of the mixture—as much as possible. The chance of getting through by this manner of proceeding is better than it would be with automatic timing. On a very cold day something similar may happen. The carbureter may show signs of freezing up, despite the preheating arrangements, and to keep it working it is advisable to deviate from the normal timing and retard the spark as much as possible.

These cases are not frequent but they occur, and it is comfortable to be able to avoid trouble rather than putting up with it. There are many instances, however, where the automatically timed ignition cannot take place at the proper moment, simply because the engine speed is not the only factor to be considered in timing if the best results are to be obtained. A strongly throttled mixture should be ignited earlier than one under high compression and a cold mixture earlier than a hot one, and these elements are ignored in every automatic timing system. The temperature of the cylinder walls as well as that of the mixture is of importance, and as the radiator works much less efficiently in summer than in winter the spark should be considerably less advanced in the summer time.

These defects which are inherent in the principle of governing the timing by the engine speed are supplemented by defects in the centrifugal governors which take care of the adjustments and in the methods by which the governors effect these adjustments. The springs of the governors are not organs comparable to valve springs, whose tension may undergo considerable changes without their work being much affected by the change. But if a governor spring becomes weak the floating equilibrium which it is its function to maintain is disturbed, and the time for ignition is thereby changed. The swinging weights of a governor are also affected by the vibrations and shocks to which the automobile is subject, and this affects the time of ignition, especially where only one ball is used and the weight of one ball is not balanced against that of another. If a number of balls are in one compartment where they open a spiral spring by their centrifugality, shocks have partly the effect that the balls are pushed back into the space vacated by them and partly that this space is enlarged and the spring is put under increased tension. If, on the other hand, the balls are located in individual grooves which are located diametrically opposite in the device, a shock pushes one ball toward the center and the other away from it, whereby it may happen that the two grooved disks get locked.

Another defect in the customary devices for automatic timing lies in the reactions from the highly variable armature resistance. If the governor operated upon a sensitive element such

as the distributor (which is employed for changing the moment of ignition where the ignition is derived from a battery) or on the contact breaker, its work would be light, but upon most of the devices in use it is the armature which is turned. The resistance to the turning of the armature has two maxima and two minima for each revolution, and these variable forces influence the equilibrium of the swinging weights unfavorably, causing a to-and-fro movement of the ignition moment as well as undue wear of the displacement organs; in some instances the phenomenon is accompanied by a disagreeable noise. The variations in armature resistance are not only the functional ones referred to, however. Other variations occur in the course of time from various causes, as, for example, when the magnets get weak, and in that case the spark timing is advanced more and more. If it has been regulated from the beginning with a view to saving the motor by means of a very moderate advancing, this provision becomes illusory.

The reactions from the armature resistance upon the swinging weights have also an agreeable effect to be sure, which is that of reducing the noise of cam gears, the effect being similar to that of an elastic coupling, and perhaps some of the favor accorded automatic timing among manufacturers is due to this feature.

Once Wrong, Hard to Mend—In practice the most objectionable feature of automatic timing is perhaps the difficulty of ascertaining whether it works right or not. The adjustment may have been properly tested at the factory, but for the various reasons indicated in the foregoing it is probable that a readjustment will be required before long. To make sure, it is necessary to make numerous test trips with the driving pinion in different adjustments. This is a troublesome undertaking and can scarcely be carried to a successful end by any but well-schooled drivers. When the timing is done by hand, on the contrary, it is easy to find the best timing for any given condition.

One of the reasons for the vogue of automatic timing is perhaps that in 1910, when the devices for this purpose hopped into the market for the second time (the Fiat company having adopted and again abandoned the plan in 1905) it was much easier to start a motor provided with such a device than one equipped with the magnetos at that time mostly in use. This

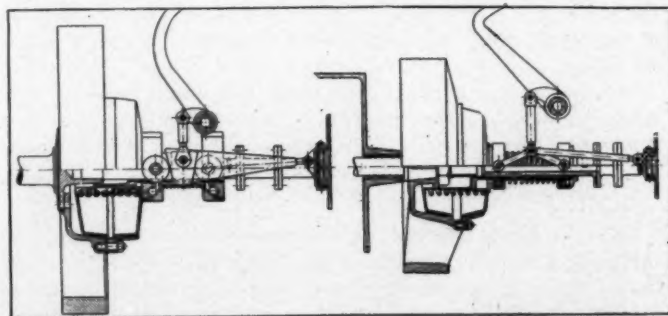


Fig. 1—Double-cone clutches in Knight motor Mercedes cars

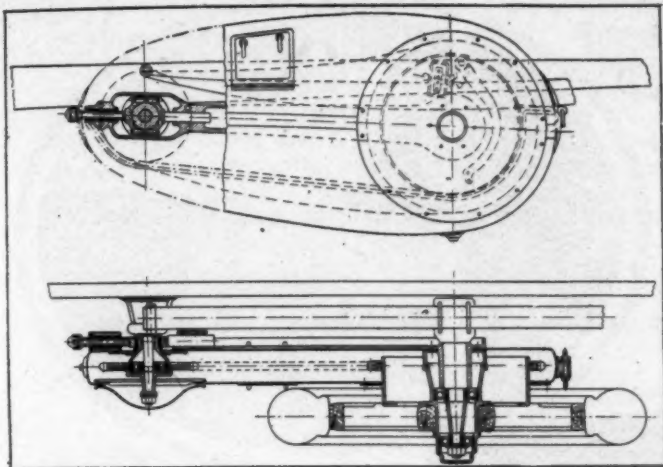


Fig. 2—Design of a chain-casing which users praise

reason is scarcely valid in 1912, as magnetos with hand-timing have now been improved so as to render the starting of the motor perfectly easy with them, too. In both cases the easy starting is due to having the interruption of the current always take place at the most favorable position of the armature.

Whether the automatic system or hand-timing gives the better average results must perhaps always remain a question of the driver's ability and temperament. Since it is true that many automobiles, and especially motor trucks, are operated with fixed timing, and as it is particularly true that vehicles operated with two-spark ignition scarcely ever are equipped with provisions for adjusting the timing but depend upon the increasing energy of the spark for hastening the combustion, it may be admitted that automatic timing devices should be accepted as an improvement in comparison with this condition, but in all cases where timing by hand would otherwise be employed they are not, in the writer's opinion, in the line of progress.—From article by Diplom-Ingenieur von Loew in *Zeitschrift des Mitteleuropäischen Motorwagen-Vereins*, ult. April.

Clutches and Chain-case in Daimler-Mercedes—While the spring band clutch of former years is still used in some models of the Daimler-Mercedes cars, a new double cone clutch is seen in the cars equipped with Knight motors. Its construction is shown in two variations in Fig. 1. The principal difference is that in one a wedge and rollers and in the other a toggle joint releases the clutch spring. By doubling the cone face two objects have been attained; sufficient surface has been gained to permit a great reduction of the diameter, thereby making gear-shifting easier; and the friction surfaces have been effectually inclosed and protected against dust. The clutch is of course self-contained, giving no axial thrust.

The chain-casing shown in Fig. 2 in side view and horizontal section reveals the design which is becoming recognized in Europe as capable of giving permanently reliable service, affording full protection against dust and being susceptible of those slight deformations which go with chain adjustment and which are unavoidable also when one wheel is raised in going over inequalities in the road surface while the other wheel follows the level. It will be noticed that the driving thrust is divided between the radius rod and the vehicle spring, that the ball bearings are located with a view to an even distribution of stresses and that the chain pinion is readily replaceable.—From illustrations in *Der Motorwagen*, April 20.

The Daimler War-Truck Chassis—Some interesting departures from former models are observed in the side and plan views reproduced herewith from *Der Praktische Maschinenkonstrukteur* of May 9. The clutch is the double-cone clutch illustrated with more detail elsewhere in this issue in connection

with other new features of recent Daimler Mercedes construction. The transmission is no longer suspended at three points in the frame, but the four points of suspension are placed in yielding relations to the frame reaches, while their mutual relations are rigid. The converging drive-thrust struts are prolonged to the rear of the dead rear axle and seem to serve at their rear terminations as fulcrums for brake action. They also support the housing of the rear wheel drive shafts, including the differential casing and a share of the weight of the cardan drive shaft from the gear box to the differential bevel gear. By separating the wheel drive from the load-axle in this manner—which, however, is a new feature only in details—it has been possible to reduce the size of the large bevel gear, while yet obtaining a large speed reduction and avoiding the universal-joint shafts used in constructions otherwise similar, and to use cambered rear wheels, on which twin tires can be made to wear evenly on hard crowned roads. The extra speed reduction is effected in the wheels, a specially cut small pinion on the ends of each drive shaft meshing with a large spur gear on the cambered wheel. This spur gear is smaller than on a previous model in order to leave room between the driving elements and the wheel felloe for the attachment of anti-skid chains. The chassis is one of those subsidized by the German war department on condition of being at disposal for war or maneuvers.

Deceptive Statistics—It is noted with great satisfaction by a writer in *Der Motorwagen* that the importation into Germany of complete automobiles has decreased steadily since 1907. France is still far in the lead, supplying about one-half of the German demand for foreign-built machines, but the total is less than one-half of what it was in 1906. The imports from the United States amount to only one-tenth of those from France and, according to the official figures, are increasing only slightly. Then, however, there is noted the apparent anomaly that the import of automobile motors from the United States jumped from 8,300 pounds in 1910 to 167,000 pounds in 1911. The German statistician has not yet figured out that this item corresponds to about 700 American motors imported, together with all the other parts of 700 American cars which are assembled in Germany and sold there, escaping enumeration under the head of complete automobiles.

Curdled Lubricant—The Gaillot brothers, makers of Anzani motors and declared devotees of certain lubricating oils, assert in the form of a story describing their experience that the use of deflocculated graphite for cylinder lubrication is rendered highly precarious by the extraordinary effect produced by the slightest trace of acidity in or with the oil in which the graphite is mixed. Such acidity, it is alleged, causes precipitation and accumulation of the graphite at every joint; for example, those of the connecting-rod, and the accumulation all but stops the motor.—From *La Revue de l'Automobile*, April 25.

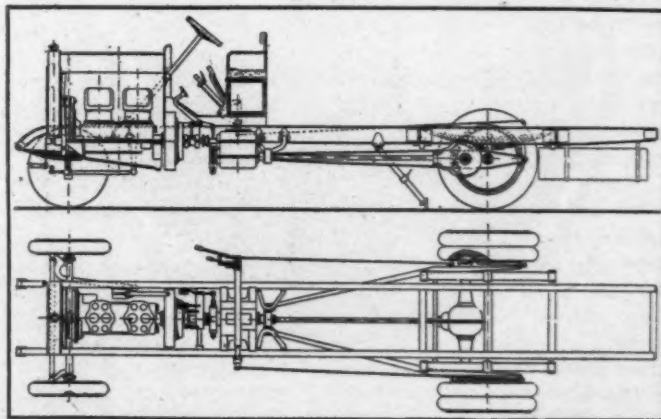
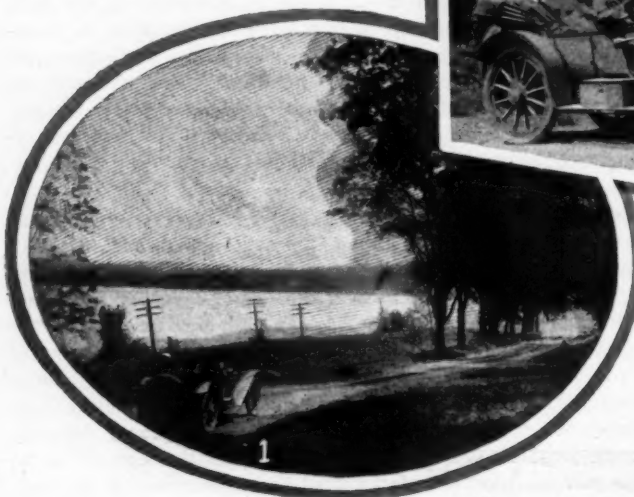
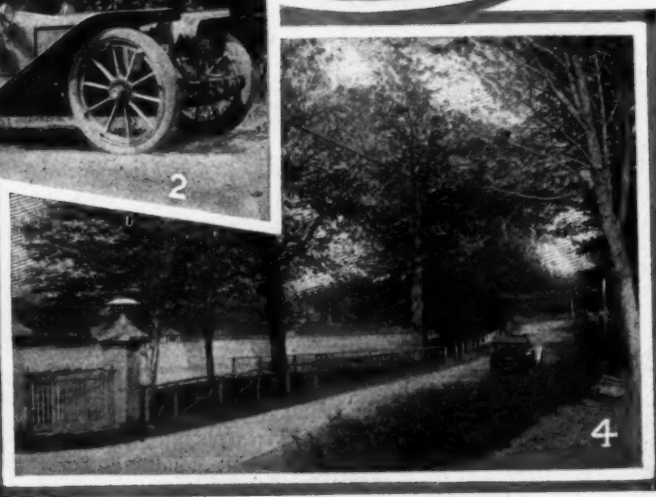


Fig. 3—Side and plan views of Daimler war truck chassis with shaft drive to wheel-gear and twin-tired cambered wheels

WEEK-END TOUR *through the* WESTCHESTER HILLS



1—Along the south shore of Lake Glenida, near Carmel
2—The American car used to carry "The Automobile" party



3—Looking across Jefferson Valley, near Lake Mahopac
4—Western end of Lake Mahopac—note method used to protect lake



UWELED June; the hills of Westchester; a good car and congenial party are the time, place and circumstances for one of the most delightful outings to be enjoyed anywhere about the metropolis. The lakes and hills are so close at hand that their beauty has never been properly appreciated, for it is a recognized trait of human nature to judge beauty, value and enjoyment in inverse ratio to its availability. Californians are entranced with the scenery in the Alps, while Mount Whitney, Shasta and the saw-tooth range of the Sierras from Yosemite to Lake Tahoe contain mountain scenes that make the Alps appear dull by comparison. Residents of Minnesota, where 10,000 lakes dimple in the summer sunshine, marvel at the poesy of Lake Como, forgetting meanwhile the loveliness of Minnetonka, and in the same way New Yorkers whisk by the emerald hills, blue lakes and wondrous panoramic landscapes of Westchester in order to enjoy scenes and surroundings that are more difficult to reach.

Nearly everybody who is enrolled as an automobilist in New York and many of the vast army of automobile visitors to this section have ridden through Westchester county, but an exceedingly small proportion of them have undertaken the tour for the tour's sake. It is generally an incident and not the main object. But the hills and lakes of Westchester are deserving of attention on their own account, as may be judged from the accompanying description of a week-end run.

The whole run outlined may be done in 1 day's easy touring, but it will be found impossible to obtain full enjoyment of the trip unless plenty of time is devoted to it. There is some-

thing interesting in every furlong of the run and consequently the start should be made in the afternoon, with the idea of spending the night at one of the lake resorts and returning leisurely on Sunday.

Road-building as an art is still far from perfection, but the highways referred to in this article represent a very high stage of progress. There is one stretch of 2 miles that is not thoroughly improved and there are several spots of a mile or less where through wear the going is not smooth. Otherwise there is nothing even in New Jersey that will excel the Westchester roads included in this trip.

Right at the start of the tour the party will pass a point of high historic interest on Washington Heights, where the course trends north on Broadway, and the site of Fort Washington, the stronghold built by the Revolutionary army to hem in the British force, may be seen to the west. This fort was taken by the invading army after a British squadron had shelled it into quietude. Its site is marked by a simple memorial tablet and an ancient gun.

Up the Hudson to Dobbs Ferry

Following the Hudson the road crosses Spuyten Duyvil Creek and proceeds up the river through Yonkers to Dobbs Ferry. The lordly palisades on the Jersey shore rise sheer from the water and as the river is miles wide at this point, the outline of the cliffs is softened and rounded into entrancing beauty. Washington's headquarters in 1781 were stationed near Dobbs Ferry, and while the house used as such has long since disintegrated, the spot where it stood is marked by a memorial of enduring bronze.

The Albany post road is generally in good condition, but here

and there will be found gangs of workmen engaged in ironing out some of the worn spots. In and around Tarrytown are numerous monuments that will arouse a thrill of national pride in the bosom of the visiting American, no matter who he may be. Sleepy Hollow, immortalized by Washington Irving, who lived, wrote and died close to its peaceful precincts; Alexander Hamilton's memorial, bringing to mind the vast fundamental work and tragic story of that brilliant patriot; the scene and detail of the gallant André's tragedy and a hundred other interesting items make up a collection of engrossing elements such as cannot be found in many other places in the United States.

A winding road takes the tourist through the Pocantico hills, where the Rockefeller estates will prove attractive not only to the curious, but to the admirers of Mother Nature's face when she carries a genial smile.

From Tarrytown to Lake Mahopac

A variety of routes may be had out of Tarrytown. The party may go north along the Hudson, *via* the Albany post road, which is in good condition to Peekskill; or it may swing west to Elmsford and then turn north on the road to Briarcliff; or it may go through the Rockefeller estate; or, better still, it is an excellent idea to keep straight on through Tarrytown, taking one of the several country roads to the north, from all of which Briarcliff may be reached. These roads may be classified as fair to good, but the scenery cannot be thus described. There are hills and valleys, little lakes and big forests all decked out in nature's most beautiful garb. Distinctly, it will pay to take one of these country roads and depend upon the natives for directions.

Briarcliff is one of the show places of the sub-metropolitan district and is famed for its wealth as well as its natural beauty. It is to be supposed that most of the lakes and ponds north

of this point have names, but the tour passes along the shores of scores that are not officially designated and are known locally as the Long Pond, Brown's Lake or some other equally illuminative title.

At Pines Bridge the way turns west and follows the north shore of Croton Lake for a short distance and then swings north through Yorktown Heights, Amawalk, along the Muscoot reservoir lake to Baldwin Place and thence to Lake Mahopac. If the route has been through Peekskill or *via* any of the numerous winding country roads extending to the northwest from Croton Lake, the party will reach the main road to Lake Mahopac *via* Lake Mohegan and Jefferson Valley, a delightful variation from the route described.

Lake Mahopac is just over the Westchester county line in Putnam county, but the topography of the country is similar to that found in Westchester. The lake is of considerable size and is bound in by a series of the most beautiful miniature hills to be found in this section. The west side is particularly graceful in appearance. The lake is stringently protected from pollution and is as clear as spring water can be. Half a century ago it was noted as a fishing ground and today its waters teem with game fish, although its reputation in this respect has been dimmed by the fame of more distant resorts.

Motor boating and sailing as well as the simple but effective means of boat propulsion known as the white-ash breeze, in other words rowing, are favorite amusements at Mahopac and in the season there is always a lively assembly of New Yorkers and cosmopolites to enjoy the restful pleasures of the resort.

There are ample accommodations for tourists, and unless some other place has been selected for the night stop, it will be well to spend the night at Mahopac. The distance from New York by the most direct route is only 56.3 miles and if the party has loafed along and taken the country roads at the various points



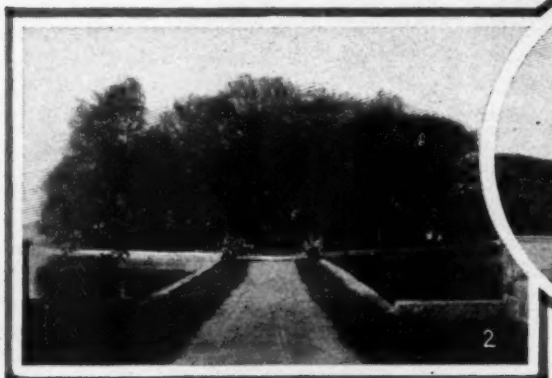
- 1—Repair work on country road south of Briarcliff
- 2—Three ranges of hills are visible from this high ground
- 3—The costliest cataract in the world, wasting New York water
- 4—After leaving Lake Mahopac, Putnam county is dotted with lakes



Splendid roads such as this are common

Country lane, near
Yorktown Heights

Near Katonah on new state highway



Nature and art in pleasing combination

North of Mt. Kisco, a
painter's inspiration

Just south of the crossing over Croton Lake

indicated, it may reach a total of 70 miles. Such a mileage can be accomplished with ease in 3 hours, but after the run is over nobody will make any protest if 5 hours have been spent.

In order to obtain the fullest measure of enjoyment the start back should be as early as possible. Unless the party has attended the nightly dance at the main hotel and has remained up until late, it will be well to instruct the hotel management to serve breakfast at 6 o'clock. Early morning on the roads in a good automobile has a charm not to be found elsewhere or at a later hour.

The air is still; the blue haze of night is lazily lifting from the hills; the only sounds to be heard are bird-songs and the hum of the motor. Even the constables are asleep or, at worst, not yet on the job. There is nobody at hand to say nay if the word is slipped along to the driver to open up a little, and with smooth going and no interference a bit of speed certainly will add to the pleasure of the party. From Lake Mahopac to Carmel and into Brewster there are numerous short stretches of highway where the statutory speed limit is really enjoyable and absolutely free from danger. But the road is a winding affair through the headwaters of New York City's present water supply and much caution is necessary to negotiate the sharp turns.

Scenery Beggars Description

Turning south at Brewster, one of the finest and most enjoyable stretches of the tour is reached. Crossing the railroad bridge the course lies to the left down a long hill and across a new concrete bridge, where five roads center. The best way lies in the direct route from the end of the bridge, although it appears to be a common dirt road for about a mile. This way leads along the eastern foothills that bound the valley, winding in and out through woodlands, lakes and hills until the solid concrete-macadam of the new state road is reached. From that point to Somers and on through Katonah and Mount Kisco there is nothing that could be changed about road or scenic con-

ditions that would be an improvement. Any description in mere words would be futile and the best advice that can be given motorists is to try it.

The picture of Mount Kisco in the distance; or of the smiling valley from high in the hills; or the inviting aspect of the lakes cannot be conveyed by word, and lose something even in the eye of the camera.

Reservoir Cataracts Beautiful

In order to fully appreciate these great beauties it is necessary, to see them early in the morning, particularly Sunday morning, from the comfortable cushions of an automobile. The road traverses cathedral-like aisles in certain sections, where the trees lock branches high over the pavement; it shoots out along the shoulder of a granite hill, where from the vantage point of the car the view is sufficient to inspire an artist to immortal work; it passes artificial waterfalls, resulting from the over-supply of water in the reservoirs at this season, some of which are worthy of ranking with natural falls and cascades to see which the tourist must travel far and spend much.

These falls are not little picayunish dribbles by any means. They are man-sized cataracts tumbling over spillways over 100 feet wide and falling in a series of steps to the level of the draining stream. Millions of gallons of spring water is required for this display in several of the reservoirs every day, constituting the most expensive series of waterfalls in the world. The spectacle is all free to the automobilist unless he happens to be a taxpayer, which of course is quite another story.

Leaving Mount Kisco the way is to New Castle and thence southward through Armonk to Kensico, where a giant reservoir is now under construction to take care of the future water supply of New York. Special attention is directed toward the fountain situated at the southern end of the present reservoir north of White Plains. The water fed to this remarkable fountain is under heavy pressure and when it escapes from the

myriad jets it is immediately reduced to glistening white vapor which in the sunshine always bears the prismatic hues of a rainbow.

White Plains, where one of the bloodiest struggles of the Revolution was staged, is the county seat of Westchester county. It is a large suburban town, popular with a comfortable class of New York business men who commute daily. The direct route to New York from White Plains is *via* Central avenue to Jerome avenue, following that main artery into the upper Bronx and thence to the center of the city.

But there is another delightful ride in store for the tourists who decide to cut across from White Plains to Portchester on Long Island Sound and follow the Boston post road through Mamaroneck, Larchmont and New Rochelle.

In fact, it is possible to make a pleasurable run by following any one of forty variants from the main road outlined. Some of these will prove to be simple detours, adding merely to the mileage and variety of the scenery, while others will penetrate the wilderness that lies over against the Connecticut line. If a detour is made east from New Castle to Bedford and south across the state line, it is possible to see a deer or two if due care is taken to keep the cut-out closed. The country is vastly wilder than one might imagine who has never been on such a trip. In case this particular variant is chosen the tourists will reach Stamford, Conn., by the way of Long Ridge and Lockwood. From there the Boston post road leads along the Sound to New York.

Deer Are Sometimes Seen Here

In following an unfamiliar country road east of Somers, THE AUTOMOBILE party halted in the morning where the road swings out of a thicket on the bank of one of the numerous little

creeks that are to be found in each mile in that section. It was absolutely still, not even a bird-note could be distinguished, and the quiet beauty of the scene was so impressive that conversation lapsed.

The road curved around the bottom of a hill and was lost in the woods beyond, but for 100 feet ahead of the car it was in plain sight.

Like the crack of a rifle came the sound of a breaking twig in the forest above the road, intensified by the stillness until it seemed a hundred times as loud as it really was. This was followed by the snapping of dried leaves and underbrush and finally a buck deer stepped gracefully from the woodland into full view on the road. He was followed by his wife and child and the trio inspected the automobile critically and curiously before leaping down the creek-bank and disappearing in the woods beyond. They might have been looking yet if the genial camera operator had not been so hasty in trying to snap-shot them.

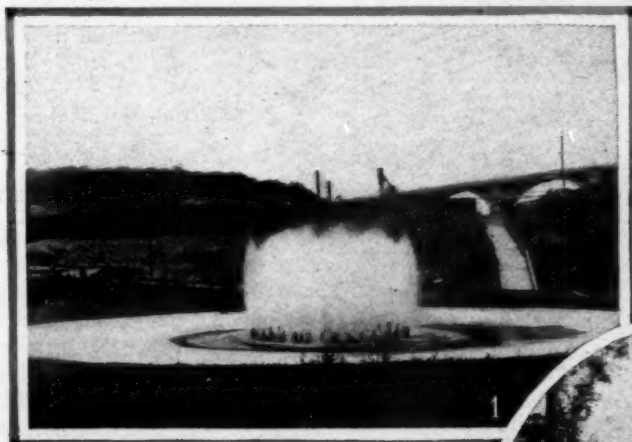
Aqueduct Policemen Decorative

This particular road does not lead anywhere specifically, as far as determined on the inspection tour. The main road east from Somers runs to North Salem on the Connecticut line.

A whole day may be spent in exploring the roads in the northwestern corner of Westchester county and another can be devoted with profit to a deliberate inspection of the northeastern section.

A comprehensive idea of the new Catskills water system may be obtained from a leisurely tour around the big reservoirs now under construction on both sides of White Plains.

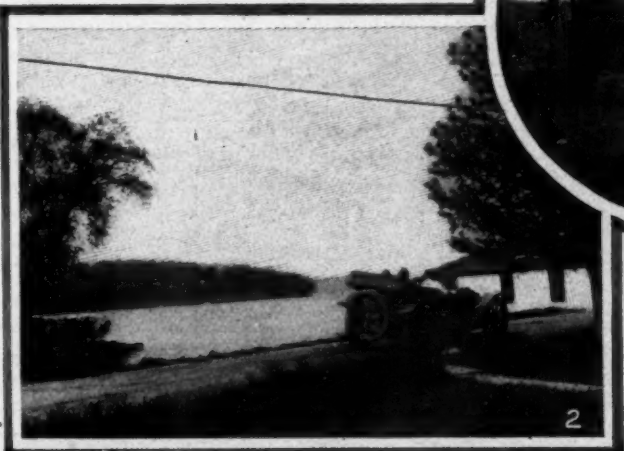
One of the most decorative features of the new water works system is the aqueduct policeman. He numbers legion and has been selected for his job because of his physique and level-



Giant fountain at foot of reservoir, near White Plains



In the northern hills of Westchester county



Lake Mahopac, approaching the village from the west



What may be seen by detour south of Pine Bridge



Looking at Sleepy Hollow from an unusual angle

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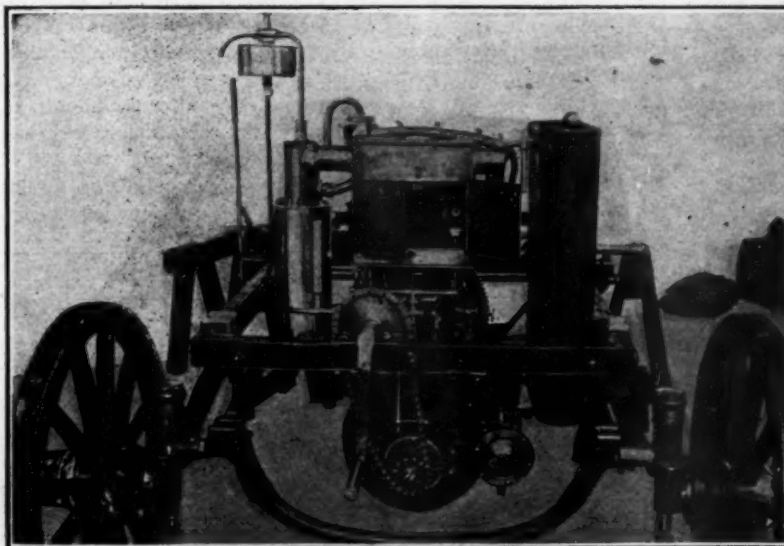
The surface carbureter is to the right-hand side of the motor, and is a cylindrical box bigger than one of the cylinders, known by old-time mechanics as the milk can. On the opposite side is a water tank; when the water boils more is added. After purchasing the car the owner added a single tube radiator at the rear, but this was only a convenience and not a necessity. The clutch is of the brush type. On a disk bolted to the motor shaft are mounted horizontal steel bristles which come into engagement with the teeth of a disk mounted on the driven shaft, this second disk having a sliding motion controlled by a clutch pedal.

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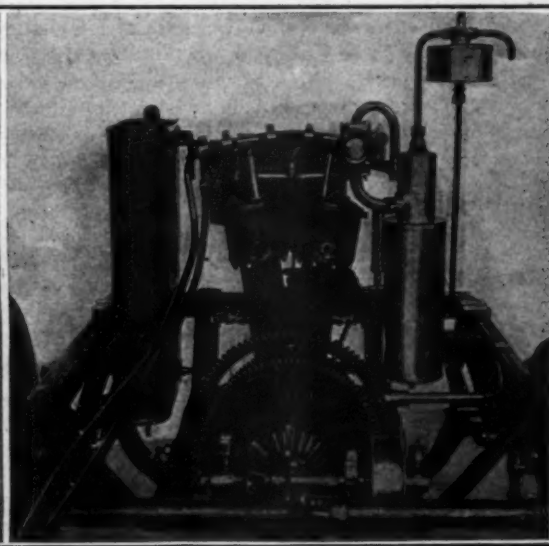
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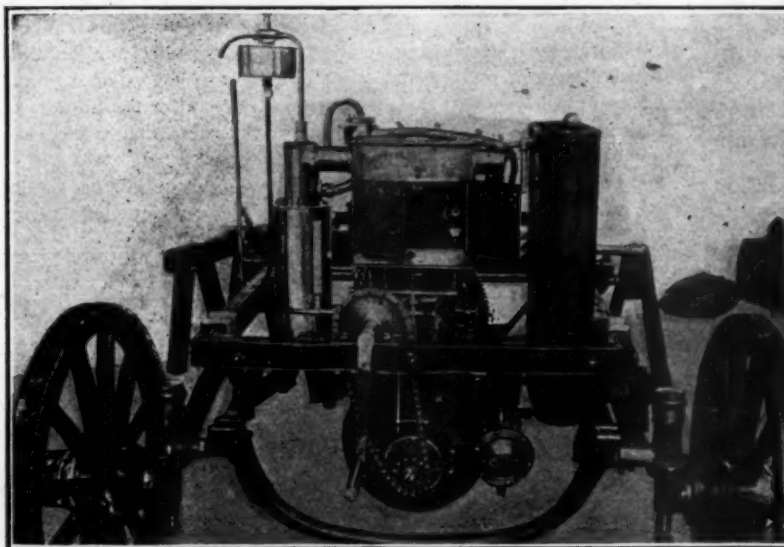
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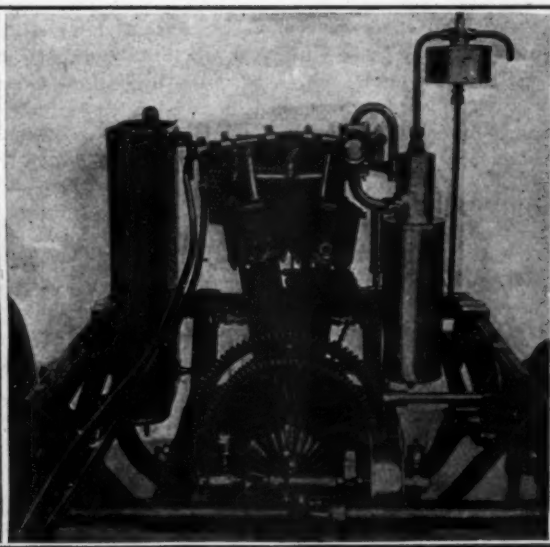
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Rear view—carburetor on right, water tank on left, three-speed sliding gearset in center



Direct Road to Jersey Resorts; Use of Interlocking Device; Calculation of Motor Horsepower; Converting White Steamer to Gasoline Car; Difference in Speed Recorders Such as Tachometer, Speedometer, Odometer, Etc.

Direct Route to New Jersey Resorts

EDITOR THE AUTOMOBILE:—In order to afford a more direct route for Delaware automobilists, and those from points south of Delaware, who are taking trips to the New Jersey seashore resorts, and also to avoid the necessity for running through and ferrying from and to Philadelphia, the New Jersey & Wilmington Ferry Company, which operates a ferry between Wilmington and Penn's Grove, N. J., has equipped its docks with slips suitable for handling the largest cars, which are ferried across the river in half an hour. As there are good roads leading from New Jersey the new route is already being taken advantage of by many tourists. The company has issued a map, Fig. 2, showing the roads and the relative distances, as compared with other routes.

I hope this information will be of value to your readers who may be touring in this section.

Wilmington, Del.

A. O. H. GRIER.

Use of Interlocking Device

EDITOR THE AUTOMOBILE:—Would you kindly tell me what are the uses of the interlocking device as fitted to the Alco car? We have recently purchased an Alco commercial car and would like to know whether this device should be used in ordinary running or only in certain emergencies.

Haddonfield, N. J.

READER.

The interlocking device stops the differential action of the rear wheels and should not be used in ordinary running. Where it is desired that equal power be transmitted to both wheels the interlocking device may be thrown in. The emergencies which call for its use are as follows: If a chain should break; when one wheel is on a slippery spot and takes all the power without the other wheel turning; when driving on ice or in snow it will stop the tendency to skid; when driving over sandy roads; ascending or descending steep hills; when one of the rear tires is torn off it will often save further damage; when driving in the mud or when one of the brakes is out of order.

Difference in Speed Recorders

EDITOR THE AUTOMOBILE:—Would you kindly tell me if there is any difference between the instruments known as the odometer, tachometer, speedometer and speed indicator? Are these different trade names of the same device or are the devices themselves different?

Pawtucket, R. I.

SUBSCRIBER.

The odometer measures distance as such, giving the readings in number of miles traversed; the tachometer is a device for measuring velocity. In automobile practice the readings are given in miles per hour. The speed indicator or speedometer is a trade name and refers to a device which is a combined speedometer and odometer.

Calculating Motor Horsepower

EDITOR THE AUTOMOBILE:—Would you please tell me through the columns of THE AUTOMOBILE how a person can calculate the horsepower of a gasoline motor?

Nashville, Tenn.

WILLIAM LIDDLETON.

The most accurate way of determining the horsepower is, of course, by the brake test but considerable confusion exists among automobilists and others as to the distinction between the various methods of determining the horsepower ratings of motors. As a matter of fact, there is a very large distinction between these methods, even though a great many persons do not appreciate it. Because a manufacturer states that the (A. L. A. M.) rating of his engine is a certain horsepower it does not necessarily follow that the actual horsepower which the motor will deliver on a brake test will correspond with his rating. Most manufacturers rate their motors according to the A. L. A. M. standard. The formula which this body has set down states that the horsepower shall equal the product of the square of the cylinder diameter multiplied by the number of cylinders which the motor has, and this result divided by the constant 2.5. This latter figure is used because it is "based on the average view of the A. L. A. M. engineers as to a fair conservative rating for a four-cycle motor at 1,000 feet per minute piston speed." Motors rated according to this standard are usually given a horsepower much below that which they are capable of developing under load. The formula does not take into account the compression pressure nor does it make use of the piston displacement, both of which factors are considered when the horsepower is determined by more accurate methods. The A. L. A. M. standard is of use for commercial purposes only in that it affords a means of comparing automobile motors as to power, but not as to the exact amount of this power. Thus, we say a certain car has 20 horsepower, according to A. L. A. M. rating, and another, 30 horsepower. The actual horsepowers may be around 30 and 40 respectively but so far as the comparison of the two motors as to relative power goes, the more approximate rating answers the purpose equally as well as the other. Frequently we are asked to explain wherein the discrepancy lies between the engine ratings of various racing cars as set forth by the entry tables. Often

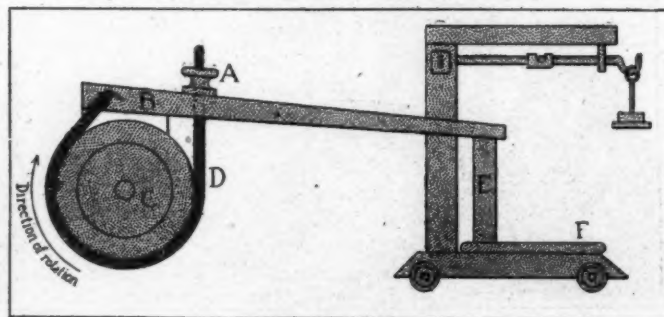


Fig. 1—Diagram of outfit used in Prony brake test

two cars of nearly the same piston displacement are entered with widely different horsepowers, and this leads to a great deal of confusion in the minds of many. This horsepower difference is usually due to the variation in the design of the motors. It may also be due to the fact that either one of the cars or both have not been rated according to the A. L. A. M. standard, unless the only variables, the cylinder diameters, are far enough apart to make up for the difference. That is, if two motors have

D^2N

four cylinders each in the A. L. A. M. formula — the only

2.5

factor which can cause the variation is D^2 , which is the square of the cylinder diameter. N represents the number of cylinders. Therefore, even though the piston displacements of the two may be about the same, in one case this may be made up by a long stroke and a small bore, while in the other the cylinder diameter may be large and the stroke short. Thus, the bores are not the same and consequently the ratings by this formula cannot be the same. A specific example will serve to illustrate this more clearly. Take, for instance, two four-cylinder motors, one having a bore of 5 inches and a stroke of 4 inches, and another having a bore of 4 inches and a 6 1/4-inch stroke. Each motor has a total piston displacement for the four cylinders of approximately 314 cubic inches, yet, by substituting in the formula already given, the motor with the 5-inch bore receives a rating of 40 horsepower, while the other figures out to be 25.6 horsepower. Of course, the piston speed is vastly different in the two cases, and it is unfair to use the constant 2.5, which is based on 1,000 feet per minute piston speed, to compute both horsepowers. While the formula is very poor at best, it is seen to be absolutely worthless, unless the constant is changed to meet the specific conditions.

Another way for getting at the power of a motor is by means of the indicated horsepower formula, which states that the latter

(M. E. P.) is

equal to the expression — In this formula

33000

l is the stroke in feet, a is the area of the piston face in square inches, n is the number of explosions per minute (usually considered as being half the number of revolutions per minute) and M. E. P. is the "mean effective pressure" acting within the cylinder throughout the cycle. The only difficulty arises in determining the last-named factor. It must be determined from an "indicator card" taken while the engine is running under load. For taking this card an indicator must be used.

A pointer traces on a paper attached to the drum, a diagram having pressure and volume co-ordinates in proportion to the actual pressures for the various volumes or positions of the piston throughout the entire cycle. This diagram is integrated—that is, its area is determined by planimeter or by computation, and, after taking into account the scale of the indicator spring, the mean effective pressure is determined by dividing the equivalent area by the length of the stroke.

For testing an automobile engine the indicator may be attached to the cylinder by screwing it into the priming cock hole. Cards need be taken on one cylinder only, and the result obtained by the above formula can then be multiplied by the number of cylinders to get the total power of the motor. It is sufficiently accurate to assume that each cylinder furnishes a proportionate part of the total developed.

Perhaps the best method of getting at the horsepower output of a motor is by means of a Prony brake. The apparatus may be fitted up as shown by Fig. 1. The test can only be performed when the motor has been removed from the frame and mounted on some sort of testing block, such as is used in the garage. The Prony brake proper is shown by B. The strap D is put around the flywheel C, and its tension is regulated by means of the handwheel or other adjusting screw A. The end of the brake beam bears on the block E which, in turn, rests on the platform F of the scales. The motor is started running and the load applied by tightening up on the adjusting screw, the

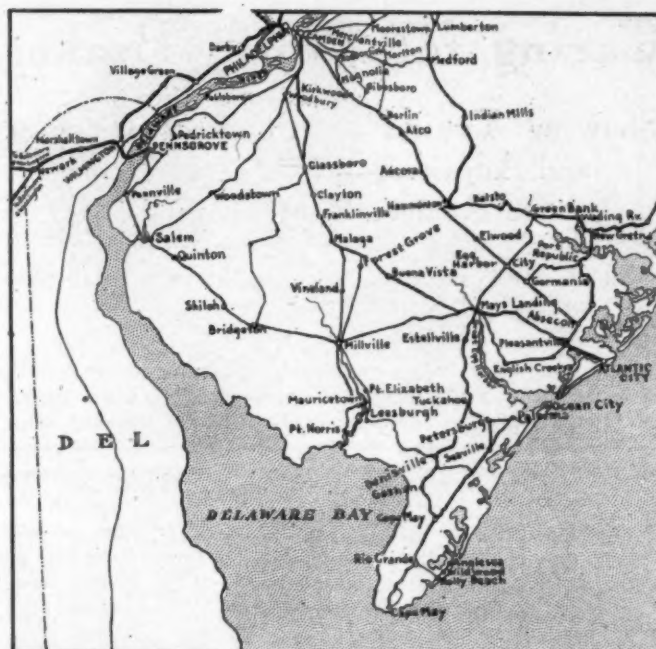


Fig. 2—Map issued by New Jersey and Wilmington Ferry Company, showing Penns Grove ferry

direction of rotation being as shown. To get the maximum brake horsepower of the motor the screw A is turned until the friction is barely overcome—that is, until the motor is running under such a load that a slight additional tightening of the strap D will stop it. When this adjustment is reached the friction is weighed by the platform scales, and the speed is noted with a tachometer or speed-counter. These readings should be taken, of course, when the motor is developing its maximum power.

Having obtained this data, the following formula is applied:

$2\pi GAN$

$$\text{Brake horsepower} = \frac{2\pi GAN}{33000}$$

The symbol π , of course, represents the constant 3.14, while G is the weight shown by the scales, A is the length of the brake arm in feet from the center of the flywheel to the center of the block E, and N is the number of revolutions per minute of the flywheel as obtained by means of the speed-counter.

When the test is properly carried out it gives a very near approach to the correct power output of a motor.

The dynamometer method of testing, which is made use of chiefly by manufacturers, is to direct-connect the motor under test to an electric generator, causing it to drive the generator and noting the electrical output in watts. The watt output can then be reduced to horsepower.

Wants to Convert His Steamer

Editor THE AUTOMOBILE:—I have a 1911 40-horsepower White steamer which I would like to convert to the gasoline system. Would a six-cylinder Continental motor of from 40 to 50 horsepower suffice? Would it be possible to utilize the old transmission and rear axle as well as the condenser?

Fordham, N. Y.

LOUIS F. KUNTZ.

If you are bent on making this transformation, which is far from advisable, the motor which you mention will, no doubt, suffice in every respect, except that it will have to be changed to run to the left instead of to the right. The rear system of the steam car turns in the opposite direction to that of the gasoline cars as the steam engine turns over in the opposite direction. The condenser can be rigged up to act as a radiator. It would be more advisable to trade your steamer in to the White company and get another car if you prefer the gasoline type.

Caring for Worn Brakes

Showing Typical Methods of Cleaning and Adjusting—When and How to Replace Worn Linings

With this Information the Car Owner with a Small Shop Can Make His Own Repairs

TO a large extent automobile legislation of the future will be governed not so much by a matter of speed alone, but by the facility with which the automobile may be controlled when traveling at a given speed. In England each policeman is an inspector of vehicles. If a car passes him and he notes anything about that car that renders it dangerous for its occupants or the occupants of other vehicles he has the power to stop that car and order it off the city streets until it has been adequately repaired and has passed a city examination. While in this country it is not probable that the city police will ever be given such power owing to a wide difference in conditions, it is very probable that the city ordinances will make it unlawful for a vehicle to be traveling through the streets with unsuitable braking power.

The brakes of a car are thoroughly tested when the car leaves the factory and they will remain in good condition for some time. When the car has been run several thousand miles lost motion is apt to develop in the braking linkage; the driver will have to push the pedal through a short distance before the brakes will start to take hold; although this will not necessarily alter the ultimate braking power of the car, it will have a tendency to make their application more slow. On all cars an adjustment can be made on the linkage, so that this lost motion is taken up. The point at which the adjustment is made will depend on the make of the car. Various devices are used for the purpose; the principal ones being wing nuts, turnbuckles and nuts with lock nuts. When these adjustments are taken up they pull up on the rods, thus tending to apply the brakes, although the action is not continued enough to bring the slightest pressure to bear on the drums. A typical brake adjustment arrangement as used on a modern car is shown in Fig. 1.

Aside from the question of brake adjustment the main feature in the care of the brakes is the replacement of the brake fabric whenever excessive wear renders this necessary. The foot brake is generally the first to wear, as the average driver seldom uses his hand brake except as a matter of necessity. When the first signs of wear are exhibited the driver should see to it that the fabric is immediately renewed. For the owner who has a small shop the renewal of the fabric does not present any marked difficulties. Many car owners make this repair them-

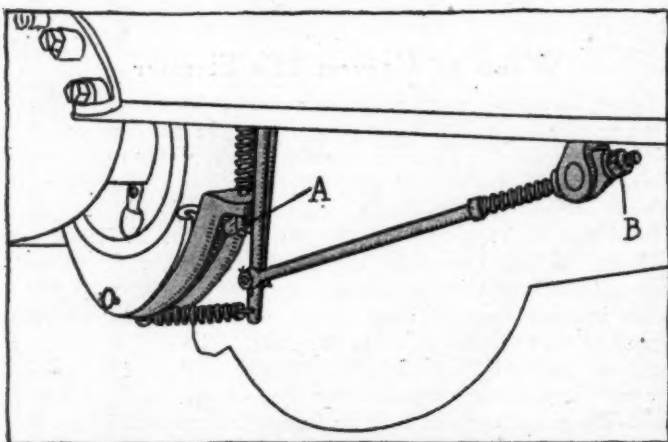


Fig. 1—Brake adjustment on Alco. A and B, adjustment points for drag and lost motion

selves, and a few words as to how it is carried out may be of advantage.

When the brakes are removed from the car they should first be examined very carefully in order to determine whether the reason for their not holding is because the surface of the fabric is covered with grease, so much grease having worked its way down into the brakes from the differential or other source that a grip cannot be taken on the drums. If grease is discovered to be present on the surface of the fabric in any quantity, it may be burned off with a torch. The brake is set up against a block of metal or held in any other position suitable and a torch applied as shown in Fig. 2. This illustration shows the work being done upon an internal expanding brake. The flame is lightly applied to the fabric and the grease is dried up. The grease must be fully dried out before the brake is replaced, and it will take some time to bake out the grease which has soaked in below the surface of the fabric. The material will not be harmed by the heat, as it is made of an asbestos composition which is not



Fig. 2—A light flame will melt grease from brake lining

readily affected by high temperatures or by contact with flame.

The elbow may be used to pry the brakeshoe back in place, as shown in Fig. 3. It is much easier to replace the brake in this way than by attempting to put the shoe in place first and then to stretch the spring across the gap between the two parts of the shoe. The object of the spring is to keep the shoes from dragging on the drums when the brakes are not engaged.

If, upon removing the brakes, the fabric is seen to be worn to such an extent that it needs replacing, the new fabric can be ordered cut to size by giving the length required, the thickness and the width. The old material is then cut away with a hammer and chisel and the old rivets driven out. The new piece of lining is then laid over the metal part of the shoe and if the shop is equipped with a drill press, the holes are drilled by means of this, as shown in Fig. 4. Should there be no drill press in the shop, a breast drill may be used just as well. In either case the old rivet holes through the metal are utilized as guides in drilling the holes through the fabric.

The rivets are then placed in position with heads on the fabric side. They are then driven in and riveted over. The finished job should have the heads of the rivets 1-16 inch below the surface of the fabric so that there will be no metal-to-metal contact between the drum and the shoe.

Relining Worn Bearings

By the Use of an Ingenious Device It Is Possible to Insure Perfect Alignment of Babbitt

Time Required for Pouring of Metal Considerably Shortened—Specifications for Good Bearing Babbitt

THE handling of bearing babbitt may be considerably shortened by the use of a device such as that shown in Fig. 1. Considerable trouble is generally experienced in getting the babbitt into exactly the correct position in the bearing where the bearing box itself acts as a mould. Where a single pulley is used to form the upper part of the mould, while the lower part of the mould is formed by the bearing support, the results obtained are apt to be unsatisfactory as far as alignment is concerned. The rig shown in the illustration includes a set of pulley wheels for all the babbitt-lined bearings in the gearbox. These gears are connected together by shafts so that a solid construction is maintained and hence alignment is positive.

In carrying out the melting of the babbitt, a long-handled melting pot is used, as is shown. A spout on the pot enables the operator to pour the metal around the pulley accurately so that a clean job can be turned out. Babbitt for bearings may be made as follows, according to the S. A. E. specification: Copper, 7 per cent.; antimony, 9 per cent.; tin, 84 per cent. A variation of 1 per cent. either way is permissible in the case of the tin and .5 per cent. variation will be allowed in the antimony and copper. The use of any but virgin metals is prohibited. No impurity other than lead is permitted and that not in excess of .25 per cent. In making up the metal, the copper should be first

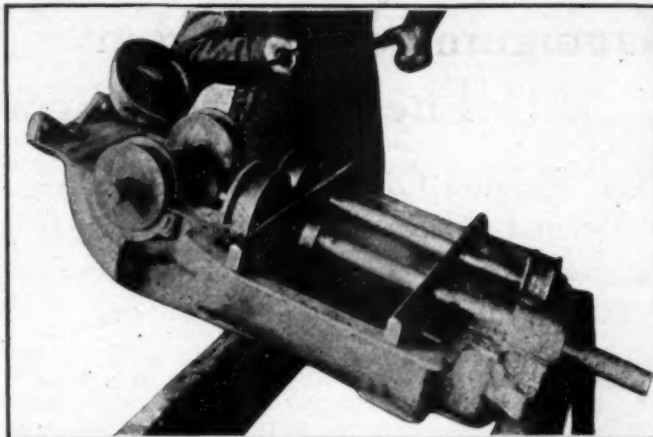


Fig. 1—Device arranged to facilitate the pouring of babbitt used at the shop of Thomas Motor Company of New York

It will stand considerable wear and does not require an excessive amount of attention as far as lubrication is concerned. The large relative percentage of copper which it contains will make it susceptible to friction, but for lining bearings that are subjected to heavy loads it should prove excellent.

For the ordinary garage man, who handles all makes of cars, it would not be practical to attempt the construction of one of these devices to fit all the cars that come into his hands, but where a service department is handling two or three models of the same make a device of this kind saves a great deal of trouble.

Automobiles in Russian Riviera

During the past few years the importation of automobiles to Russia has increased rapidly. While in 1908 the total did not reach 4 million rubles, it rose to over 6 millions in 1910 and it is estimated that the figure for 1911 is nearly twice as large. The vehicles are mostly French, Italian and German and must be very robust and easy to keep in running order, as the Russian chauffeurs and mechanics lack both experience and tools in too many instances. The automobile habit has taken root especially in the Caucasus, the Russian Riviera, where many wealthy persons of different nationalities as well as Russians pass the winter. At Tiflis alone 600 to 700 automobiles are in daily use.



Fig. 3—Method of replacing the brake shoe seen in the service department of the U. S. Motor Company; spring should not be removed

melted and the antimony added to that. About a quarter of the total amount of tin should then be put into the mixture and the whole mass stirred until homogeneous. The balance of the tin is then added.

In order to prevent a large part of the antimony escaping as a vapor, a tablespoonful of powdered charcoal may be thrown into the molten copper before the antimony is added. This metal, when carefully prepared and poured in the bearing boxes in some such manner as that shown above, is excellent for automobile use.

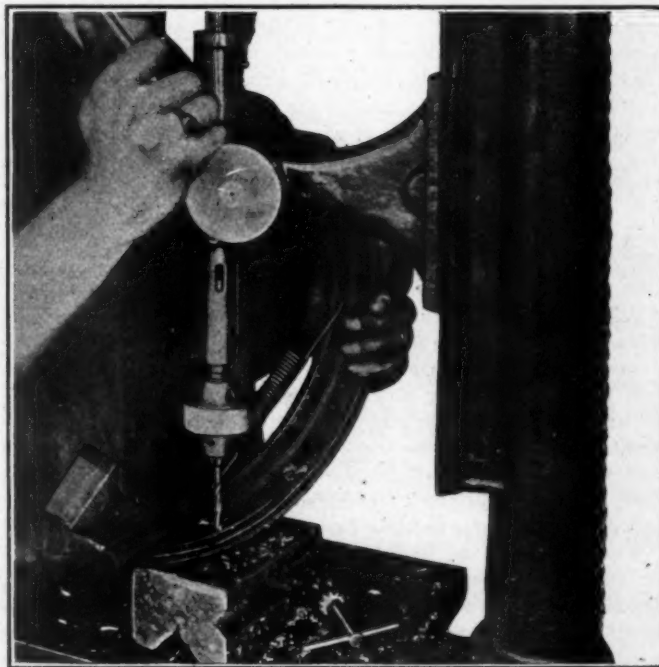


Fig. 4—In drilling holes the holes in the metal act as guides

Communications from The Manufacturer

The Pleasure Car as a Money-Maker— What Is Needed to Secure Efficiency in Motor Trucks—Comparative Value of Racing and Touring

THE idea of a motor car has so long been associated with lavish upkeep expenditures that it requires a distinct mental readjustment to look on automobiles as sources of profit. To illustrate the point attention might be called to a seven-passenger touring car, which has been purchased by seven men who lived in a Long Island town about 20 miles out and somewhat removed from the railroad. Every morning the car makes its rounds, picks up the seven men and makes a quick, exhilarating run into New York City, dropping each one at his office. And since they are all in the downtown office section, this is quick work. At night, the car calls for them and brings them home, refreshed by their trip. In addition, each family has the use of the car 1 day a week. The car is stored in a portable garage and the cost of upkeep to each owner is nominal—from \$1.50 to \$2 a week.

Another automobile owner is a woman who has no particular need for extra pin money, but who was not in good health and was advised to keep much out of doors. She had a detachable bus body made for her car and has a route of twenty customers whom she takes to their train every morning. In the evening she meets the trains and motors her clientele home. In addition, she takes a dozen children to and from school daily in her bus, and occasionally takes out picnics and excursions. Fitted with the regular touring body, the car is used for 1-day tours for private parties, etc. Since she drives the car herself all of the very substantial revenue she derives from it is clear gain.

The automobile has, of course, for some time been the indispensable first aid of the real estate agent, who dashes his prospects across country with a verve that in itself half clinches the sale. But a more radical plan is that of a real estate company which is developing a very large and somewhat scattered tract in New Jersey. To knit the buyers of their property into a communal whole, and to connect with all trains, the real estate company has recently bought five cars, which will run on schedule time and will be at the disposal of the colony, free of charge.

When people begin to realize the potentialities of the automobile as an economic factor, when they understand that it can not only be made self-supporting, but actually profitable, a hundred new uses for it will be discovered.

B. C. SPITZLEY, Abbott Motor Company.

Efficiency in Motor Trucks

IT is an established fact that the better motor trucks are efficient from the standpoint of machinery and that they are capable of doing much more work than horses. The real problem in motor trucking now concerns the reformation and readjustment of conditions and customs that have grown up around beast haulage, so that the truck may have full play in the realization of its potential efficiency. It is a simple matter of saving time, of keeping the truck moving so that its motion minutes will exceed to the largest possible extent, its stopped time.

Arnold Bennet calls time "the raw material of everything." It is, indeed, the raw material of motor truck service. But this should not be misunderstood. It does not mean that the truck should be speeded up. Under favorable conditions our present normal truck speeds of 10 to 15 miles an hour are sufficient to revolutionize our street and highway transportation.

The problem is to reduce the truck's stopped time by bringing

the efficiency of the methods used in loading and unloading up to the efficiency of the truck. It includes also such traffic arrangements as will permit the truck to proceed at its normal speed through the streets.

Other transportation agencies are affected by the same conditions. One of the greatest leakages in the system of railroad management has recently been attributed to the stopped time of rolling stock in the yards. The great ore and grain boats which ply on the Great Lakes owe their efficiency very largely to the fact that they are loaded and unloaded with amazing speed.

Quick work at the terminals is just as valuable in the operation of the motor truck. Delays are costly not alone because they mean a tied-up investment, but because they rob the truck of an opportunity to create values, what the economists call place values, in excess of the amount represented by interest on the truck investment.

Successful co-operation in motor trucking is a three-cornered affair. It must include the shipper, the truck operator and the receiver, whether all three happen to be parts of a single company or are separately managed.

One well-known firm of building supply dealers by making an investment in hoppers and other quick-loading devices has increased the efficiency of its trucks far beyond what was necessary to make the equipment pay for itself.

Some building contractors are still blind to the advantages of co-operating with the dealer in his truck operation. They place their concrete mixers in places inaccessible to trucks. Thus they delay the unloading process, reduce the motion minutes of the truck, and impair its efficiency.

Retailers who receive motor truck deliveries from wholesale houses are equally indifferent to their own interests, chiefly because they do not realize what motor truck service means to them, or might mean to them. By tardy receipt of consignments they keep the truck standing idle, delaying freight for the next man on the route as the one before delayed theirs.

Wharves for the exclusive use of motor trucks would be a great help at water shipping points. Trucks are now delayed by slow-moving teams. Suitable hoisting devices installed on such wharves would greatly reduce the truck's stopped time.

The greatest truck problem, therefore, concerns not the truck itself, but the manner of its use. We need to key every feature of the transportation system up to the efficiency of the truck. The motor truck has been so badly needed for the last decade that it will not take long to work the problem out when its importance is thoroughly understood.

Racing and Touring Compared

It is typical of the automobile man that he should go more than half way with the public. In order to exhibit his good faith the motor car maker has carried on various forms of contests that have proved the merit—or lack of it—of his car. These contests may be divided roughly into two main divisions, racing and touring. Both divisions have their followers. Some manufacturers believe that racing is the one positive way of proving a machine's stamina and power, while other car builders will not race, but enter tours.

Both racing and touring are good for the manufacturer and for the buyer. Good for the manufacturer because it shows him wherein he has succeeded or failed. Good for the buyer because it gives him his cue for the best values.

Racing requires the real brand of sportsmanship that always evolves only one winner. The rest always lose. Only one car can be shown superior in a race. Racing is more severe, it calls for more strain, more wear and upon every ounce of power and every fiber of strength of the car.

Next to the race, perhaps, comes the hill-climb. It is a fact that a successful car in racing and hill-climbing is also able to conquer the less strenuous task of touring. Both racing and touring have given an impetus to the efforts to procure better roads.

GEORGE M. DICKSON,
National Motor Vehicle Corporation.

Fighting Air Craft With Automobiles

German Army Officials Conduct Test to Throw Light on the Possibility of Preventing Balloons from Leaving a Besieged City—Cars Win

ASSUMING that the dirigible or other balloon and the flying-machine proper will assume an important part in warfare, it is important to consider what rôle the automobile will play in chasing the aerial vehicle with a view to bringing it down with a well-directed shot and either interrupting its messages or preventing it from delivering them, from securing plans, or from making attacks by explosives.

In order to test the feasibility of preventing an airship or its equivalent from doing damage or being in any way of service, an experiment recently was made in Dresden under the supposition that the city was beleaguered by an army which had cut it off from communication by road, water or wire in every direction; that the last carrier pigeon had been shot; while the only dirigible airship which could have passed over the enemy's lines had been wrecked. Still, an ordinary balloon remains. This is stationed in the suburb Reick, where the giant works are situated.

For some days the direction and force of the wind had been tested before a day arrived which was considered favorable for reaching help by the balloon of the ordinary spherical type. The weather is dull, cold and foggy, which is considered favorable to the enterprise. It is the last day when such means of obtaining assistance would be of use. The enemy is naturally not asleep, has eight automobiles ready to follow any aerial vehicle which might attempt to pass over the cordon, and is as well posted as to the favorable wind as are the beleaguered defenders.

The eight cars which had been distributed in a circle about the city are brought to the east side, from which it might be expected that the balloon would endeavor to escape. The giant yellow balloon, once filled, can be concealed only so long as the fog lasts.

At 9:30 A. M. the besiegers placed their autos for the long chase. The velocity of the wind was reckoned at from 2 to 3 meters per second—that is, from 4.4 to 6.6 miles an hour—from the northwest. Four autos were detailed for the right (north) bank of the Elbe, four for the left.

Luck was at first on the side of the besieged; the fog would not lift or disappear; even the sun was in league with the besieged. Shortly after 10 o'clock the autos were at their posts—Ullersdorf, Rossendorf, Gönsdorfer Turm, and the Borsberg near Pillnitz; Zschachwitz, opposite Pillnitz; the Lugturm, Grossborten and Babisnau, on the south side or left bank. At 11:30 the balloon was ready, manned by four officers experienced in its management. In 3 minutes it had disappeared in the clouds, where in general there is a different wind direction and velocity from those obtaining at the ground level.

From Gönsdorf reporters of the official *Dresdner Anzeiger* from their post in a 50-horsepower car watched with their glasses the sky in the direction of Dresden and Reick. Gray against gray; nothing but fog. As the wind stood in the northwest, they drove at 10:30 to the heights of Weisse Taube, about 1¼ miles from Lohmen, near Pirna, and from which point there was a good view of the valley of the Elbe and up towards Rathewalde and Hohenstein. At 11:45 they drove to Pirna and farther upstream to the fortress of Königstein, without being able to see the balloon.

In the evening the General Staff of the besieging army called a meeting of the volunteer automobilists to consider the events of the chase. The reports showed that the weather was very favorable to the balloon, as it could, in consequence of the fog, rise very high at once, while the automobiles were, by reason of that very fog, prevented from traveling fast or sighting the balloon. The latter had been seen to rise at 10:50 A. M. The most favored car was the one at the Borsberg, as the balloon sailed almost directly over it. None of them had seen the balloon. The automobile from the Borsberg drove at 11:38 via Eschdorf to Dittersbach; the one at Gönsdorf at 11:30 to Pirna; the one at Ullersdorf to Stolpen; the one at the Lugturm to Pirna and northwards; the one at Grossborten to the Lugturm and Pirna, and that at Babisnau to Pirna and Rathewalde.

The balloon landed after 45 minutes east of Zaschendorf, northeast of the Borsberg, without difficulty. It had reached a height of 4425 feet, or about 0.83 mile, and lost its reckoning. It would have been necessary to come lower in order to take advantage of the lower air currents. It landed within the lines of the besieging army (6-mile radius) and must be considered as having been captured by the rear guard.

AUTOMOBILE FACTORY IN JAPAN—Steps are being taken in Tokyo to form a \$1,000,000 company for manufacturing motor cars. Over 70 leading business men of Tokyo and Nagoya are interested.

AMERICAN PURCHASES IN LONDON—The declared exports of automobiles and parts through the London consulate general to the United States for the 3 months ended March 31, 1912, aggregated \$107,138, an increase of \$40,433.

Calendar of Coming Events

What the Months Ahead Have in Store for the Sport-Loving Automobilist

Shows, Conventions, Etc.

- June 17-22..... Milwaukee, Wis., Convention and First Annual Show, National Gas Engine Association.
- June 27-29..... Detroit, Mich., Summer Meeting of the Society of Automobile Engineers.
- July 10-20..... Winnipeg, Man., Canadian Industrial Exhibition.
- July 12-14..... Logan, Utah, Fourth Annual Intermountain Good Road Convention.
- July 22-26..... Detroit, Mich., Cadillac Week.
- Sept. 23-Oct. 3..... New York City, Rubber Show, Grand Central Palace.
- Dec. 7-22..... Paris, France, Paris Automobile Show, Grand Palais.
- Jan. 11-25, 1913... New York City, Thirteenth Annual Show, Madison Square Garden and Grand Central Palace, Automobile Board of Trade.

Race Meets, Runs, Hill Climbs, Etc.

- June Portland, Me., Hill Climb, Maine Automobile Association.
- June St. Louis, Mo., Reliability Run, Automobile Club of St. Louis.
- June 1..... Philadelphia, Second Annual Contest for the Fletcher Cup, Automobile Club of Philadelphia.
- June 6..... Washington, D. C., Reliability Run, Washington Post.
- June 8..... Narberth, Pa., Track Races, Quaker City Motor Club.
- June 20..... Algonquin, Ill., Annual Hill-Climb, Chicago Motor Club.
- June 20-22..... Portland, Me., Reliability Run, Pine Tree Motor Contest Association.
- July 3-5..... Belle Fourche, S. Dak., Second Annual Track Meet.
- July 4..... Petersburg, Ind., Track Meet.
- July 4..... Riverhead, L. I., Road Race.
- July 4-5..... Taylor, Tex., Track Meet, Taylor Automobile Club.
- July 4-6..... Old Orchard, Me., Beach Meet, Old Orchard Automobile Association.
- July 5-6..... Tacoma, Wash., Road Races, Tacoma Automobile Club and Tacoma Carnival Association.
- July 15..... Milwaukee, Wis., Reliability Run, Wisconsin State Automobile Association.
- Aug. 8-10..... Galveston, Tex., Beach Meet.
- Aug. 23-24..... Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.
- Sept. 2..... Indianapolis, Ind., Track Races, Speedway.
- Sept. Chicago, Ill., Commercial Vehicle Test, Chicago Motor Club.
- Oct. 7-11..... Chicago, Ill., Reliability Run, Chicago Motor Club.
- Oct. 12..... Salem, N. H., Track Meet, Rockingham Park.
- Nov. 6..... Shreveport, La., Track Meet, Shreveport Automobile Club.

Foreign

- June 15-23..... Vienna, Austria, International Tour, Austrian Automobile Club.
- June 25-26..... Dieppe, France, Grand Prix de France, Automobile Club de France.

AUTOMOBILE

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THE CLASS JOURNAL COMPANY

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Lessons of the Big Race

THE Indianapolis speedway race classic has been run and won and not a fatal accident occurred. From this point of view last Thursday's 500-mile race stands in a class by itself when compared with the other stellar attractions in long-distance speedway meets. Although won at a speed of over 78 miles per hour the performance of the leading cars proved that when drivers are skilled, when cars are tuned to the fray and when a safe course is furnished it is possible to average speeds of 80 miles per hour, and over, without exacting any of the toll of human life, which, in the early days of automobile racing, so often marred the sport.

This year's race was unique in comparison with the performance of 12 months ago: The broken steering knuckles of 1911 were entirely wanting. The lessons learned on that fatal day bore fruit and the steering mechanisms in this year's race carry down to history a 100 per cent. record. This is as it should be, and the credit for it must go to high-speed contests on roads and tracks. Now that a steering knuckle can be made to withstand the tremendous fatigue necessary in 500 miles on a brick surface at over 75 miles per hour, it is to be expected that stock cars will be fitted with steering parts of equal fatigue-enduring qualities.

The only regrettable feature about the big classic is that the car buyer fails to cash in so far as the car he buys is concerned. It is excellent to know that such steel

can be used in steering parts and such workmanship done upon these as the big race demonstrated, but the car buyer is not assured that he is going to get such materials in the car he purchases which bears the same manufacturer's name as those in the race. The big classic was not a stock event; it permitted of makers using any materials, using any designs for parts, and only restricted them in the cylinder capacity. It would be one of the greatest assets to the makers of the competing cars if the buyer knew that he was getting in his stock car the same materials and the same designs and the same strength and durability of parts that were placed in the cars in these races. In some of them it is true that the regular stock models are made of the same materials as are the racing monsters, but the world does not know it and the maker cannot advertise it under the rules of the A. A. A. Contest Board.

The speedway classic needs another chapter: An examination of the materials used in the more important and safety parts of the chassis, such as front axles and steering parts; also in the crankshaft, connecting-rods and pistons. Where the analysis of such parts, the size and workmanship done on them are the same as in the regular stock models then the maker should be permitted to advertise it as such; and, on the other hand, where the materials in such parts, the design and size are different, the machine should be labeled and known as a non-stock product throughout.

There is too much deception employed by many makers who compete in non-stock events, and their advertisements after the races convey entirely erroneous conceptions. Where advertising is permitted following a meet then it should be in accordance with the facts and not otherwise. During the last 12 months there have been scores of cases where advertising deception has existed. A non-stock car has won an event or made a particularly good showing and the glibly written, carefully worded advertisements have been intended to create the impression that the performing cars were the regular stock machines. This is wrong and must be discouraged. It is to be hoped that those concerns advertising the performances of their cars in this event will, for the benefit of the industry, tell the simple, plain, unvarnished truth, because it speaks stronger and makes more sales than the artfully worded deceptive advertisement.

Long-distance races have worked enormous progress in the manufacture of the American car: The gruelling centuries of miles have tested every grade of steel, they have tested the parts for strength and for fatigue qualities. The maker has profited by these, particularly so in stock machines. In free-for-all and Class C events, in which stock construction is not essential, many points of information are learned by the maker, and the wise ones use all of these in their stock products. There are others, and their number is considerable, who gain experience on specially built machines, but do not incorporate the valuable lessons into their stock products. If makers want Class C, or non-stock events, then they should be required to advertise them as such, and where the same materials and parts are used as are in the stock chassis let the governing body make such examinations or verifications as may be needed regarding these, and then let the public know the exact truth about the matter. It has a right to know this.

Are Towns Liable When Roads Cause Accidents?

Wisconsin Automobile Association to Push Suit to Recover for Fatal Accident Due to Highway

KENOSHA, WIS., June 1—The Wisconsin State Automobile Association is preparing to actively take up the suit of the administrator of the estate of Harvey Gibson, of Kenosha, Wis., against the township of Salem, Kenosha county, for damages, the idea being to establish through the case a definite ruling by the state supreme court as to what constitutes the reasonable safety of a highway.

In the trial of the damage suit in the circuit court at Kenosha, Judge E. B. Belden directed a verdict for the defendant township. The suit has hung fire since November, and the W. S. A. A. counsel is now arranging for the appeal to the supreme court.

Gibson and Edward Collier, of Kenosha, a well-known reliability and racing driver for the Rambler several years ago, were driving in Salem township on a dark night. To avoid striking a buggy on the narrow road, Collier turned out, but went too far and the big car toppled over a high embankment. Gibson was killed and Collier suffered serious injuries.

Collier brought suit for damages, but the court changed the jury's answers to some of the questions and the verdict in favor of Collier was practically set aside. The Gibson estate then brought suit in the Gibson behalf, but received an unfavorable verdict.

It was shown in both trials that the road in question was too narrow for two ordinary horse-drawn vehicles to pass safely, but despite this fact both suits were decided in favor of the township. The road has since been widened and made safe.

To cover the lack of a law which requires the township to make safe any road within its limits, the W. S. A. A. will try to have the appeal decided before the next session of the Wisconsin Legislature, January, 1913, so that in case of another unfavorable verdict, an act may be proposed to the Legislature for passage, for future needs.

Trustees Fail to Drag Roads

DAVENPORT, IA., June 1—United action on the part of automobile dealers and owners in several Iowa counties has resulted in complaints being filed before the county attorneys against the township trustees for failure to carry out the provisions of the road-dragging law this spring. In Maquoketa and Clinton counties this has already been done and in the latter instance the matter has been carried before State Attorney Journal Cosson on failure of the county attorney to prosecute the trustees. Davenport automobile owners are investigating the matter in Scott county and unless the trustees begin road improvement, will carry the matter before the county attorney.

Nearly all of the Iowa roads, including the River-to-river road, beginning at Davenport, are dirt highways, and local experience has demonstrated that they are most easily kept in repair by dragging. The law specifies that it shall be the duty of the township trustees at their regular April meetings to divide their respective townships into permanent road-dragging districts and to designate what districts shall be dragged. It is obligatory, however, that all mail routes and main traveled roads shall be dragged. It is the duty of the trustees to provide suitable road drags. The expense is to be met at the time of the annual road levy by levying one mill on the dollar on the township assessment for the dragging fund, to be used only for such purpose.

This has not been done, and with the touring season opening up automobile owners insist on the matter receiving immediate attention.

Authorities Failed to Erect Sign of Warning at Abandoned Road and Car Plunged into It in Dark

NEW HAVEN, CONN., June 1—Attorney P. W. Chase has brought two suits against the town of North Haven, one for \$10,000 and the other for \$4,000 on behalf of the estates of Joseph T. Curtis, of Simsbury, and Matthew O. McMahon, of Meriden. These suits are the result on an accident on March 19 in North Haven, in which Mr. Curtis was killed and Mr. McMahon was badly injured. It is the first suit of its kind brought in Connecticut, it is said, and it will be based upon the common law that towns must keep their highways in such condition as to be safe for motor traffic. The two men were traveling in a motor car from Hartford to New Haven and when about half a mile north of a section called Montowese where there is a sharp turn in the road, it being a new road, the motor car was wrecked. The old roadway has been abandoned and there is no barrier or other warning that this old road which was straightaway has been discontinued. So the motorists did not make the turn and the accident resulted. Attorney Chase alleges that the town officials showed negligence in allowing this defect to continue unmarked.

Club Helps Police to Stop Speeding

LOUISVILLE, KY., June 1—Co-operation of motor car owners to aid in the detection of violators of the speed laws has been asked by the Louisville Automobile Club. Acting on the advice of the Board of Public Safety, the club has sent to every owner of an automobile in the county post cards that may be filled out and mailed to the organization, reporting violations of the law. The following resolutions were adopted at the last meeting of the club:

"Be it resolved, That the Louisville Automobile Club stands for the proper enforcement of the law, and will give our earnest support and lend financial aid if necessary in the prosecution of violators, whether members of the club or otherwise, until such time as the reckless driving and speeding that has characterized the past be stopped."

The Louisville Police Department is conducting an active campaign against joy riding and scores of violators of the speed laws have been taken into custody.

Forty-Three Clubs Added to A. A. A.

At the regular semi-annual meeting of the National Assembly of the A. A. A. held on Tuesday at the Hotel Astor forty-three clubs were added to the membership roll. Kansas reported eleven clubs, Nebraska, twelve; Iowa, seven; Ohio, nine; and Pennsylvania, Oklahoma, Idaho and Montana, one each. President Robert P. Hooper was in the chair.

The other business taken up included the present complication in Ohio. No conclusion was reached as to the recognition of the recently organized Ohio Motor Federation, which contends that the annual election and proceedings of the Ohio State Automobile Association were irregular. Both these bodies are now seeking affiliation with the national association. The matter will come up for final action at the first fall meeting of the A. A. A. executive committee.

Dr. C. E. Dutton, of Minnesota, was approved as chairman of the special committee in charge of the coming National Reliability Tour which will be run from Detroit to New Orleans. The other members of the committee are: L. R. Speare, W. E. Moyer, John Wilson and W. E. Metzger.



Beginning of the long battle—contestants swinging into first turn amid clouds of smoke and rattle of exhausts

National, Dawson, Wins

(Continued from page 1267.)

Dingley's Simplex at 40 miles after the finish of the first half; and DePalma's Mercedes, which went out at 495 miles.

The time required for the different cars for each of the 100 miles, together with the speeds made by them, is as follows:

Driver	Car	Distance	Time	Speed
Dawson	National	100 miles	74:24	80.7
"	"	200 miles	74:41	80.3
"	"	300 miles	79:45	75.2
"	"	400 miles	75:24	79.4
"	"	500 miles	76:52	78.5

Dawson did not make a stop in the first century and maintained his high average, 80.7. He had two stops in the second century, one to change spark-plug and one to change tires, losing 5 minutes, but in spite of this averaged 80.3, showing that he did his hardest driving in the race in the second century. His third century was the slowest, 75.2 miles per hour, due to tire changes.

The performance by centuries of Tetzlaff's Fiat shows a higher speed than Dawson, in that Tetzlaff averaged over 80 miles an hour for three laps, averaging 82.7 in the last 100 miles. His third century put him back in that he averaged but 67.5 miles per hour. This was due to a couple of stops, one of 5 minutes and the other of 3 minutes. His performance was as follows:

Driver	Car	Distance	Time	Speed
Tetzlaff	Fiat	100 miles	73:37	81.5
"	"	200 miles	74:14	80.8
"	"	300 miles	91:01	65.7
"	"	400 miles	80:09	74.8
"	"	500 miles	72:28	82.6

How the Other Cars Performed

The century performances of the remaining cars show their varying speeds. With Hughie Hughes, in the Mercer, the first and last centuries were the fastest; the same is true of Merz, in the Stutz, who finished fourth. With Endicott, in the Schacht, the fourth century was the fastest. Zengel driving No. 2 Stutz made the last century at 77.05 miles per hour, his fastest for the day. Jenkins, driving the White, made the first century at 78.06, his fastest; Horan, in the Lozier, made his first the fastest, at 77.4 miles per hour. Wilcox, in No. 9 National, was slow at the start, due to valve troubles, and gradually increased his speed, making his fourth century his premier speed effort at an average of 78.7. With Mulford, in the Knox, his first 100 was his fastest, but this, at 75.6 miles per hour, was slow when the real speed of the car in normal operation is taken into consideration.

Glancing momentarily at the cars that were eliminated from the race, it is seen that the speed of many of them was greater than heretofore shown by cars of their class. With DePalma, three centuries were made at over the 80-per-mile mark, the first

one at 82.1, the second at 83.6 and the fourth at 81 miles per hour. Burman made his first and fastest century at 77.2 miles per hour. Anderson, in No. 1 Stutz, averaged 79.5 for the first 100 miles.

Very Fast Time for a Few Laps

Firestone-Columbus averaged 78.6 for its only century. The McFarlan averaged only 74.6 on its one century. The Buick averaged 74.5 on the only one it completed. Hearne and Disbrow, in the six-cylinder Case machines, averaged 68 and 61 respectively. Wishart, with his Mercedes, averaged slightly over 74 miles per hour in the two centuries he was running. Dingley, in the Simplex, followed with motor troubles, averaged 60.4 in the first and 69.9 in the second century. Matson, in his Lozier, had figures at 67.5 and 65.5 for the two circuits he was a contestant. The other cars stood as follows:

Car	Driver	Distance	Time	Speed
Mercer	Hughes	100 miles	75:16	79.5
"	"	200 miles	77:32	77.3
"	"	300 miles	81:36	74.5
"	"	400 miles	83:13	72.1
"	"	500 miles	76:32	78.7
Stutz	Merz	100 miles	75:41	79.2
"	"	200 miles	81:12	73.8
"	"	300 miles	79:29	75.4
"	"	400 miles	81:52	72.4
"	"	500 miles	76:26	78.8
Schacht	Endicott	100 miles	84:38	70.9
"	"	200 miles	82:50	72.4
"	"	300 miles	79:51	75.3
"	"	400 miles	77:10	77.5
"	"	500 miles	81:59	72.5
Stutz	Zengel	100 miles	85:47	69.9
"	"	200 miles	84:10	70.7
"	"	300 miles	77:21	77.4
"	"	400 miles	83:38	71.9
"	"	500 miles	77:53	77.5
White	Jenkins	100 miles	76:19	78.6
"	"	200 miles	84:26	70.8
"	"	300 miles	81:59	72.5
"	"	400 miles	84:31	70.8
"	"	500 miles	85:23	70.1
Lozier	Horan	100 miles	77:21	77.4
"	"	200 miles	80:04	74.8
"	"	300 miles	87:19	68.7
"	"	400 miles	89:14	67.2
"	"	500 miles	91:59	65.2
National	Wilcox	100 miles	108:14	55.4
"	"	200 miles	83:36	71.9
"	"	300 miles	82:07	72.0
"	"	400 miles	76:35	78.7
"	"	500 miles	80:58	74.3
Knox	Mulford	100 miles	79:14	75.6
"	"	200 miles	115:47	51.8
"	"	300 miles	132:05	45.5
"	"	400 miles	94:50	65.1
"	"	500 miles	91:04	65.6
Mercedes	DePalma	100 miles	73:01	82.1
"	"	200 miles	71:46	83.6
"	"	300 miles	78:34	79.7
"	"	400 miles	73:13	81.0
Cutting	Burman	100 miles	77:45	77.2
"	"	200 miles	80:42	74.6
"	"	300 miles	84:2	70.9

The start of the race was better than a year ago. The cars lined up in five parallel rows across the track. In the first row were Nos. 1, 2, 3, 4, 6; in a second row, about 30 feet back of them, were Nos. 7, 8, 9, 10, 12; the third row, at a similar distance back, contained Nos. 14, 15, 16, 17, 18; in the fourth row were Nos. 19, 21, 22, 23, 24; and in the last row Nos. 25, 28, 29 and 5. No. 5, Disbrow-Case, should have been in the front row, but, owing to gearbox trouble just previous to the start of the race, it had to make a hasty trip to the garage and only got on the track after the others were all in place. President Carl Fisher, of the Speedway, and C. W. Sedwick, representative of the Racing Board in Indianapolis, set the pace for the start in a car about 30 feet in front of the first line of contestants. The pace-maker, went the circuit at an average of 55 miles per hour bringing the cars around to the starting line at a speed of almost 70. At this point the pace-maker pulled to the side and the other twenty-four, the structures of iron, steel and rubber that were to be the gladiators of the day, started off in a cloud of smoke on the long grind of 500 miles. As they dashed into the first turn there was a cloud of smoke and some dust, due to the preparation on the track. In a second lap this was all over and from that period until the end the track was clean and clear.

In a speedway race the performances of the cars in the first fifteen or twenty laps are watched carefully by the spectators, but after that time the leaders have lapped so many in the field that it practically becomes impossible to follow the cars except by consulting the score board, which shows the positions of the cars at the end of each lap. Unfortunately errors crept into this service, some cars were credited with more laps than they had covered, others with fewer, and so the possibility of accurately following the race was more or less upset.

Fiat Led at End of First Lap

When the twenty-four racers entered the stretch on the first lap it was soon seen that Tetzlaff had his red Fiat to the front. At the start he gained the position from his rival, DePalma, who was at his right in the first row. He opened a gap of 100 yards on the rest of the field. Hotly pursuing him were DePalma, Wishart, Dingley, Dawson and Wilcox. At this point Bruce-Brown, who had started in the last row, had not shown up in the front group.

By the time the leaders broke into the homestretch in lap 2 it was seen that DePalma was creeping up on the Fiat, and was only a few yards back of him. Then came bunched together Wishart, Dawson, Wilcox, Dingley and Bruce-Brown. At this point the leaders were half a lap ahead of the Opel and the Lexington, which were bringing up the rear end of the fighters.

Lap 3 witnessed a centralizing of the efforts. Tetzlaff maintained the lead with DePalma closing on him, and Bruce-Brown bringing his big National up through the contenders.

Lap 4 saw the two Mercedes pass Tetzlaff, who was back in third. Wilcox had put his National fourth, Bruce-Brown was up in fifth, Dawson sixth, the Simplex seventh, and Hughes eighth.

At the end of lap 5 the five leaders, DePalma, Wishart, Brown,

Tetzlaff and Wilcox, had lapped the tail-enters. At this time the leaders were all bunched so that a good baseball pitcher could have passed a ball from DePalma, who was leading the quintet, to Wilcox, who brought up the rear end of it. One hundred yards back of these leaders, and racing side by side, were Dawson, Mulford and Dingley. One hundred yards back of them came Hughes, in his Mercer, all alone. Nearly 100 yards back was a bunch made up of the two Loziers, two Stutzes, the White and the Cutting.

Lap 6 saw the foreign entries leading Brown in the National. These three speed kings, during the lap, pulled away from Tetzlaff and Wilcox, and it was apparent that it was to be a fierce speed duel for first position among these three. As after events proved, Wishart was soon eliminated by a tire and Brown by a piston-ring breaking, leaving DePalma alone. The positions of the others at this time remained unchanged, Dawson running with the Knox and Simplex 300 yards back. At this point it was easily seen that there was to be a duel among the three Stutzes, the two Loziers, the White and the Cutting. They were running 1-2 mile behind the leader, but well together.

Began to String Out on Lap 7

It was in laps 7 and 8 that the leaders began overtaking the slower members of the race. First one of the tail-enters was left a circuit behind and then another, and soon the twenty-four contestants were scattered in a long string around the entire track.

At the end of lap 8, 20 miles, at which time the first official time announcement was given out, DePalma had a mark of 14:38, Wishart 14:40; Bruce-Brown 14:40; Tetzlaff 14:49, Dawson 14:55 and Dingley 14:55. The remainder of the field were running 10 to 15 seconds back of these.

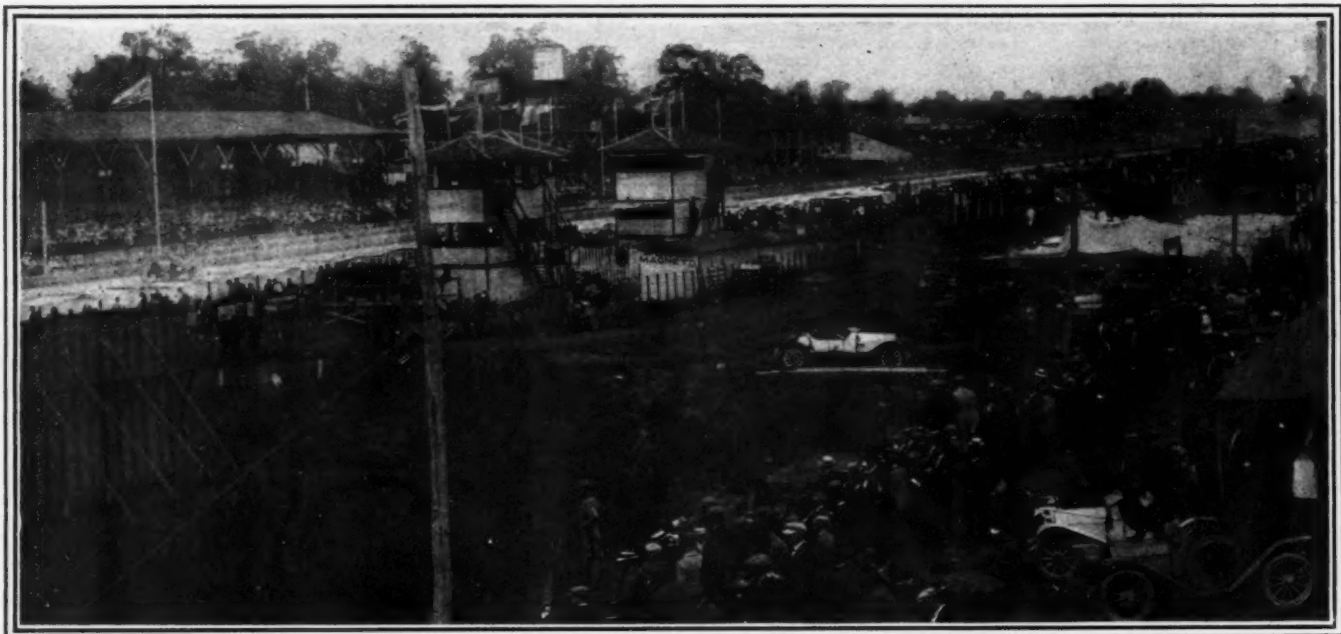
By the time 25 miles were covered six of the cars were out in the front, these being the two Mercedes, the three Nationals and the Fiat. At this point both Cases and the Opel had stopped at the pits, the Opel withdrawing on account of a broken gasoline line. The leaders had gained a lap on the Schacht, which was setting a steady, consistent pace, and there was a mile separating DePalma and the Mercer. Wilcox's National stopped with a broken valve; his pace among the leaders being too fast for his new motor.

At the end of lap 12, or 30 miles, DePalma, Brown and Wishart were running a great race, DePalma and Brown running side by side with Wishart some distance back. These three had a lead of several hundred yards on Dawson and Tetzlaff.

In lap 13 a schoolboy could throw a stone over the space which separated the three leaders. Mulford had his Knox going in excellent form and was gaining, while Tetzlaff and Dawson were hanging onto their position with grim determination. The Mercer was over a mile back of the leaders, but running along with that graceful ease which put it in a class by itself so far as performance was concerned. At this time the second group, namely, the two Stutzes, the Loziers, the Cutting, the White and Simplex, were 1-4 mile back of the Mercer, but fighting it out for position



Line-up of drivers and mechanicians of the twenty-four contesting cars before the start



General view of grand stand and timers' and scorers' positions from one of the scoreboards

with a determination shown by the lap rivalry among the leaders.

It was in lap 14 that the first break-up among the leaders occurred. The tremendous pace of nearly 84 miles an hour was too fast for Wishart's tires and he stopped in this lap, leaving DePalma and Brown to fight the first-place duel. At this point Tetzlaff and Dawson had pulled away from the others and were pursuing the leaders. The Mercer was still running alone with the other group in rear.

Throughout laps 15 and 16 the duels for position continued. DePalma and Brown not a stone's throw apart; Tetzlaff and Dawson in a deadly struggle and the other contestants as in the previous lap.

Throughout laps 17, 18 and 19 this situation continued. In fact, it continued in laps 20, 21, 22 and 23. There were a few changes in position, but nothing of consequence. A stop by Mulford brought the Knox back into the rear of the field. A stop by Matson's Lozier put him away from his running mates.

It was at the end of lap 26 that Brown's National had to stop and this brought an end to what might be termed the machine-destroying speed pace that had been set up at the start, DePalma winning first honors in this initial fight. At this time the Simplex stopped with valve trouble, making three cars in all having troubles of this nature, and six cars practically having their running chances destroyed before the race was well started. But it has always been so in races, and will continue to be so; there are those drivers who start out on a speed battle to get positions, and invariably there are many early eliminations.

DePalma Led the Procession

From this point to the end of the first 100 miles the race became a procession. DePalma up to 60 miles running a dead heat with Brown, found himself at 80 miles to be a leader with a margin of nearly 1 minute on Tetzlaff and Dawson; and at 100 miles had a lead of 36 seconds on Tetzlaff, who was second, and 93 seconds on Dawson, running third. One of the greatest features in this century was the performance of Merz, who pushed his Stutz from last into fourth place, and running close upon the Mercer. One other who had put his car up during this part of the race was Horan, in the Lozier.

The second century saw DePalma, Tetzlaff, Dawson and Hughes running in one, two, three, four fashion throughout. At the end of this distance the times for these four leaders were: DePalma, 144:47; Tetzlaff, 147:51; Dawson, 149:05; Hughes, 152:48. There was but 8 minutes between DePalma and Hughes. Merz, who in the first century had gone to the front, gave way

A Study of the Cars

LIKE last year, so this, the 500-mile speedway classic was a non-stock car race, open to cars of under 600 cubic inches piston displacement and the minimum weight of 2,000 pounds. Because of this latitude, no effort was made by any of the manufacturers to race strictly stock machines. There was little object in such because under the rules of the American Automobile Association it is impossible for any manufacturer to advertise the performance of a stock car unless in a sanctioned stock car contest, in all of which the cars are checked over with their stock specifications.

The winning National, which Dawson drove, was a special machine, the National company never having made a series of the same type. It used a four-cylinder T-head motor, cast in pairs with cylinders 5 by 6 1-4 inches bore and stroke. The car

to the Lozier, which at 140 miles, got into fifth position, losing it at the end of the second century. During the latter part of this circuit Jenkins brought the White up into seventh position.

The third century, namely, 200 to 300 miles, saw more or less confusion in the field. DePalma held his own, but Dawson took second place only to lose it for 60 miles to the Fiat and regain it at the 300-mile mark. Hughes was holding his position. Both Merz and Jenkins were bringing their cars into position, Endicott and Zengel were changing places with the Schacht and Stutz, the latter leading at the end of the century.

The fourth century saw DePalma and Dawson drive on unmolested in first and second positions. Tetzlaff was having gasoline trouble and at the 400-mile point was in rear of Hughes and Merz and running in fifth position. Endicott had brought his Schacht up into sixth place, the White was seventh, Stutz eighth, Horan ninth, Wilcox tenth and Mulford eleventh. There was little changing of positions from 400 to 500 miles. Tetzlaff regained third position, putting Hughes in fourth place, Merz had his Stutz well in hand for fifth, the Schacht was running sixth, the White seventh and Zengel eighth. It looked as if these positions would continue to the finish, but the elimination of DePalma unexpectedly moved every one up one position. It was near the end of this century that Jenkins lost his position with his White to Zengel's Stutz, tire troubles figuring in the exchange of positions.

was built with a shorter wheelbase than the other two Nationals. It used a Schebler carbureter, two-spark Splitdorf magneto, and was equipped with a double set front and rear of Hartford shock-absorbers. The two Nationals driven by Wilcox and Brown were special speed creations built a year ago. They have cylinders 5 by 7.5 inches, with one valve in the head and the other offset.

DePalma's Mercedes, which made such a spectacular performance, was a four-cylinder type with cylinders in pairs; it had the valves located in the cylinder head, there being a single intake and two exhausts for each cylinder. This motor was a long-stroke type, 5 1-8-inch bore and 7 5-64-inch stroke. It was fitted with Bosch magneto, Rayfield carbureter, Michelin tires and Hartford shock-absorbers. The car was chain driven and was one of the three using this type of final transmission in the race, the others being Wishart's Mercedes and Dingley's Simplex.

Tetzlaff's Car Purely a Racer

Tetzlaff's Fiat, which finished second, was the car in which he established road records at Santa Monica in May of this year. It is a racing creation from start to finish, having four cylinders cast in pairs, with valves in the head. Each cylinder has a single intake but double exhaust, the intakes having a diameter of 3 3-8 inches. The camshaft is carried in an aluminum housing over the cylinder heads, the aluminum housing inclosing, not only the shaft, but also the rocker arms for actuating the valves.

The three Stutz cars, which ran so consistently, were all alike. They used a four-cylinder motor cast in pairs, with 4 3-4-inch bore and 5 1-2-inch stroke. Like the majority of the contestants they used a double-distributor magneto and shock-absorbers.

The Mercer car attracted more attention than any of the other cars in the contest. It was a specially built type, painted a bright yellow color, the same as used by Harroun a year ago. This car has a motor of a four-cylinder type cast in pairs, 4 3-4-inch bore and 5-inch stroke. High speed has been aimed at by reduction in weight of piston and connecting-rods. The pistons are steel forgings weighing 2 pounds 6 ounces each, and the connecting-rods are hollow forgings of round section weighing 2 pounds 9 ounces each, making the total weight for a piston and connecting-rod of 5 pounds, as compared with 14 or 15 pounds on many stock machines.

The White was the first six-cylinder car to finish the race, the other sixes, with the exception of Mulford's Knox, being eliminated. They were the two Cases, the Lexington and the McFarlan. The White six was of standard line of construction, employing the monobloc six-cylinder casting with 4 1-4-inch bore and 5 3-4-inch stroke. A single spark magneto was used.

Wolverines Tour to Race

DETROIT, June 3—The Wolverine Automobile Club of this city believes it has solved the tour problem with its recently perfected plan of non-penalized sociability event. Just fifty-one cars, owned and driven by members of the club, toured down in this way to the Indianapolis 500-mile race.

The Detroiters made a formal start at 8 o'clock Tuesday morning, May 28, from Grand Circuit Park. The cars were sent away at half-minute intervals, and the first day's run was to Fort Wayne, Ind. There was no noon control, the cars stopping for lunch for the crews wherever the surroundings seemed to attract. The day was rainy and the roads were very heavy.

Immediately after breakfast on Wednesday the tourists left Fort Wayne on their way to Indianapolis, taking lunch at Anderson, Ind., as guests of the Remy Electric Company. Henry Ford, maker of the famous Ford car; Harry Matthews, of the Jackson factory; C. D. Cutting, engineer of the Clark Carter Company, and Chief Engineer Berger, of the Oakland company, were among the guests at the luncheon.

The return trip was made by a different route, with Dayton as the night control. This left a run of 264 miles to Detroit on Saturday, and an early start was ordered. The last day was made a go-as-you-please. Some of the cars made remarkable time while others contented themselves with slower progress. A few remained for the night in Toledo, concluding their run Sunday morning.

A unique feature was the fact that the tour was escorted for the entire distance by two members of Detroit's traffic squad.

The performance of the Schacht is one of the talking points of the race. It did not excel in speed, but the consistency of its performance was a revelation. It uses a four-cylinder motor of the T-head type, cast in pairs, which has a 4 3-4-inch bore and a 5-inch stroke.

PHOENIX, ARIZ., June 1—Between fifty and sixty Studebaker cars, E-M-F and Flanders models, will leave Phoenix for the Grand Canyon next Tuesday morning on the Arizona Motor Company's sociability run. In the party will be over two hundred persons from Phoenix, Mesa, Tempe, Tucson and other points in the southern part of the state. The run is to be held under the sociability rules of the A. A. A. George Purdy Bullard will act as referee for that organization.



Scene at the luncheon tendered the Wolverine Automobile Club by the Remy Company at Anderson, Ind.

Roads Bad; Sales Good

Kentucky Mountaineers Buying Cars, and Preparing to Improve Highways Upon Which to Run Them

LOUISVILLE, KY., June 1—Wholesale distributors of motor cars report that, despite the great need of better highways in the mountains of southeastern Kentucky, this section of the state ranks with other parts of the Bluegrass state in the matter of purchasing automobiles. Owners of motor vehicles have become good roads advocates in that region and in the contiguous section of Virginia. These motorists and others interested in highway improvement are arranging for a convention to be held in Bristol, Va.-Tenn., this summer to consider plans for a highway from Bristol to Lexington, Ky.

Bell county is preparing to vote on a bond proposition and other counties are preparing to take similar action. Across the border in Virginia several counties are setting Kentucky a good example in road building. According to a dispatch received here a network of macadamized highways is being constructed through the counties of Lee, Wise, Wythe, Smyth, Washington, Scott and Russell. Wise county is spending \$700,000 in building turnpikes; Smyth, \$100,000; Russell, \$425,000; Washington, \$200,000, and Lee, \$364,000. This expenditure indicates that the people of Virginia are very much in earnest on the road question.

The mountain counties of Kentucky are sorely in need of better highways. Many of these counties are now making rapid progress because of the advent of the automobile and by reason of the extensive development of the immense coal beds that is under way in the eastern portion of the state. There are gratifying indications that a great number of the people who reside in the mountain districts are fully alive to the situation.

Building Roads to Reservations

WASHINGTON, D. C., June 1—Representative Davenport, of Oklahoma, who is imbued with the good roads spirit, is anxious to have a system of public highways established in the growing state which he represents, of a character to compare with those of other commonwealths. Mr. Davenport is now pushing vigorously a bill before the Committee on Indian Affairs, introduced by him, which provides for highways along all the section lines in the various Indian agencies in eastern Oklahoma. If he is successful the aid thus secured from the government will go far, in conjunction with the work which the state is doing, in furnishing roadways of modern workmanship in that section.

The highways sought to be built, under Mr. Davenport's bill, also would provide a route for tourists in the southwest which would be of much interest, as it would take the motorist through the picturesque habitats of the Seneca, Wyandotte, Ottawa, Eastern Shawnee, Peoria, Miami and Quapaw tribes of Indians.

MILWAUKEE, WIS., June 1—Work on the improvement of a principal highway between Chicago and Milwaukee has been started by the Chicago-Milwaukee Good Roads Association. The work is in two divisions, the members in each state contributing and doing the work in that state. The Association is raising \$6,000 to \$10,000 for the work by memberships of \$2 per annum and voluntary contributions. The road will be in shape for the heavy travel expected from Chicago to Milwaukee for the big road racing carnival in September.

MINNEAPOLIS, MINN., June 1—Since the Elwell state road law has been declared constitutional by the Minnesota supreme court the state highway commission has been asked for \$2,000,000 covering nineteen state highways. The longest proposed road is from Duluth to St. Vincent, 350 miles, at a cost of \$1,500 a mile.

No Steering Gear Spills

If Main Mechanism Breaks, New Device Will Prevent Front Wheels Swerving from Side to Side

ROCHESTER, N. Y., May 27—Edward W. Bliss has obtained a patent on a device which, he claims, will prevent accidents caused by the breaking of the steering gear of automobiles. Three years ago the device was presented to the patent authorities at Washington, but a patent was refused on the ground that a Frenchman had a similar device. After investigation the devices were found to be dissimilar in construction and the patent was granted to the Rochester machinist.

The device is a double steering gear, operating independently. The main gear is attached to the machine and the second gear can be put on when desired. The main gear is operated on a knuckle joint, while the new device operates directly on the wheels of an automobile. A steering post is fastened directly beneath the wheel and operates on a worm screw connected with rods which run to the forward wheels on which are bolted collars set in a flange bolted to the wheels. The flanges are constructed so the collar rests in them and runs on ball bearings, the two wheels being connected by rods across the front of the machine. If the main gear breaks the rods hold the wheels from swerving and steer as if nothing had happened. If one of the rods of the device breaks, the other does the work. If a nut comes off one of the wheels, the flanges and collars prevent the wheel from coming off, and the same applies in case both wheels become loose. If the axle breaks, the machine will rest on the rods and give the operator time to bring his car to a stop without endangering his life or the lives of pedestrians.

Mr. Bliss, who claims to have built the first steam automobile in Rochester 15 years ago, is confident of the success of his invention. Practical automobile manufacturers have taken hold of it and plan to manufacture it in this city.

Brownsville-Tampico a Tough Trip

TAMPICO, MEXICO, June 1—The first automobile trip ever made between Brownsville, Texas, and Tampico, Mexico, was finished recently by Homer Hart and W. C. Shaw, of New York, Charles Pierce, Clarence Wharton, A. C. Swanson and J. T. Pierce, of Brownsville. The distance covered was about 300 miles and the time 28 hours. The route was through a region that had never before been penetrated by a motor car and the party had many interesting experiences. There is a fair road for about one-third of the distance, the remainder of the route followed being along cattle trails and often over rough hills and through deep sand. The country between the two points is well timbered and is cut up by several rivers of considerable size and some smaller streams. After making several short runs into the territory around Tampico the party went in their cars to Victoria, about 150 miles northwest of here, and shipped them by rail to Brownsville.

Experimenting on Ohio's Roads

COLUMBUS, OHIO, June 1—The Ohio State Highway Commission is going to do extensive experimenting in highway construction during the present season and has selected a stretch of the road leading from the Hartman farm into Columbus as the place for the experiments. The county commissioners have given the necessary permission. The reason for the selection of the road is the fact that there are no branches leading into it and the entire road would have practically the same traffic wear. It is proposed to divide the road into sections to give all road material men a chance to build a section and compare it with the other sections of the road.

Paris Show Co-operative

Five Trade Organizations Will Participate in the Profits of the Exhibition, Scheduled for Dec. 7-22

PARIS, May 25—Saturday, December 7, has been fixed as the opening day of the next Paris automobile show, and Sunday the 22d of the same month as the closing day, the exhibition in the Grand Palais thus remaining open to the public for 16 consecutive days. This year's show is organized by the automobile manufacturers for the automobile manufacturers, 80 per cent. of the profits being shared by the individual members taking part in the exhibition. Five trade associations—Automobile Syndicate, Cycle and Automobile Syndicate, Automobile and Accessories Syndicate, Bodymaker's Syndicate, and Accessory Manufacturers' Syndicate—are represented on a joint committee of which Armand Peugeot is the president and M. Cezanne the general secretary. The Automobile Club of France only figures in a honorary capacity, and has really no direct representative, for its only member, M. Rene de Knyff, represents the racing board and not the full club committee. When all expenses in connection with the Salon have been settled, the profits will be distributed as follows: 40 per cent. to all exhibitors in proportion to the amount they have paid for the rental of their stands; 40 per cent. to all exhibitors who for the previous 6 months have been attached to one of the five organizing syndicates; and 20 per cent. into the funds of the five trade associations in proportion to the amount they have paid in rental.

Paris Shows Always Profitable

Automobile show organization in Paris has always been a profitable undertaking. When the Automobile Club of France held the first motor show in the world, in 1898, under a tent in the Tuileries Gardens, it realized a net profit of \$9,032. The following year the amount was a little larger, the third year it had increased still further, and the profits of the fourth show were about double those of the first. Altogether the first four shows of the club resulted in a net profit of \$59,999. In 1902 the French automobile manufacturers refused to allow the club to take all the profits of the annual shows. The national club was allowed to continue the organization of the Salon, but it had to admit on its committee a certain number of members of the three leading trade associations, and agree to share the profits with them. This arrangement was continued for 7 years (1902 to 1908) the individual profits for these seven shows being \$33,038, \$28,021, \$35,015, \$46,673, \$67,192, \$8,480, and \$28,080. The first eleven automobile shows held in Paris—from 1898 to 1908—realized a total profit of \$296,495, of which the Automobile Club of France pocketed \$180,045, the Automobile Syndicate \$46,322; the Cycle and Automobile Syndicate \$46,116; and the Bicycle Syndicate \$24,012.

After the 1908 show there was another revolution. The manufacturers, declaring that the Automobile Club was a social body kept up at their expense, refused to take part in any more exhibitions organized by it. The joint committee which had existed for 7 years, was dissolved; manufacturers declared that the profits should come back to the exhibitors and not be placed in the strong boxes of any trade association, and finally trade bodies which had not previously had a voice in the management of the exhibitions claimed a place on the committee. The result was that the present joint committee, composed of members of the five leading trade associations, was formed and the profit-sharing scheme inaugurated, with only 20 per cent. of the profits going into the funds of the trade associations. The prices of stands are high, for it is the policy of the organizing committee to cover all expenses without taking into consideration gate re-

Engine Builders to Meet

Papers of Interest to Automobile Men to Be Read at Milwaukee Convention—Some of the Exhibitors

THE National Gas Engine Association will hold its semi-annual convention at Milwaukee, Wis., from June 17 to 22. At the same time a gas engine exhibition will be held in the Auditorium building, a large room in which will be devoted to the association meeting. Papers and discussions pertaining to gas engine construction, business and application will come up. Among the papers which are of special interest to automobile engineers, the following should be mentioned: "Lubrication and What it Means," by A. E. Potter, and "The Tractor," by L. W. Ellis.

About forty exhibitors' stands will constitute the show. The firms exhibiting will be manufacturers of machinery, engines, producers, electric apparatus and lubricants. Among them are: Motsinger Device Manufacturing Company, Pendleton, Ind.; Julius Andrae & Son, Milwaukee, Wis.; Hercules Electric Company, Indianapolis, Ind.; Henricks Novelty Company, Indianapolis, Ind.; Lavinge Manufacturing Company, Detroit, Mich.; G. D. Harris, Milwaukee, Wis.; Champion Ignition Company, Flint, Mich.; J. H. Williams & Company, Brooklyn, N. Y.; Kokomo Electric Company, Kokomo, Ind.; Electric Storage Battery Company, Chicago, Ill.; Witherbee Igniter Company, Springfield, Ill.; Rock Island Battery Company, Cincinnati, O.; International Acheson Graphite Company, Niagara Falls, N. Y.; Dayton Electrical Engineering Company, Dayton, O.; National Carbon Company, Cleveland, O.; Pfanstiehl Electrical Laboratory, North Chicago, Ill.; Wheeler & Schebler, Indianapolis, Ind.

Atlanta-Greenville Road Launched

ATLANTA, GA., May 28—One of the most ambitious road building schemes ever projected in the South was launched at Cornelia, Ga., yesterday, when more than 1,500 enthusiasts met at the call of the Habersham County Good Roads Association and organized the Piedmont Highway Association. The main object of this newly-formed body is to promote and finance the building of a good road from Atlanta, Ga., to Greenville, S. C., along the line of the Southern Railroad, with a branch road also to Asheville. Such a road would run through some of the most picturesque scenes to be found in all the Southland. The officers of the new association will soon work out a definite scheme for promoting the new highway.

COLUMBUS, OHIO, June 3—Thomas E. Davy, a member of the board of administration, has announced that 75 convicts of the Ohio penitentiary will start work to-day at Carroll, Ohio, on the roads. The plan to be followed is to permit the convicts to select their captains and lieutenants and the discipline will be modeled after that obtaining in the United States army.

ceipts; thus the 20 per cent. retained for distribution among the five organizing associations is a considerable amount, and a number of members of the trade would see reform carried still further by lowering the rents and reducing the total amount to be distributed in profits. Despite criticism, however, the new arrangement of profit sharing is much more equitable than the old system under which a social club, the members of which frequently had no trade connections, and sometimes did not even own motor cars, had the entire control and all the profits.

Foreign firms wishing to take part in the next Paris show will be treated on the same basis as home manufacturers, the drawing of lots for positions being impartially conducted.

BULLETIN News of the Week Condensed



Sampson truck which has taken the place of twelve horses in the service of a New York City flour mill

TRUCK Supplants Twelve Horses—A novel method of emphasizing success and economy in the use of motor trucks was adopted recently by the Hecker-Jones-Jewell Milling Company, of New York City, when twelve horses and six men, supplanted by a Sampson 5-ton truck, were paraded behind the truck through the down-town business section of the city.

Pittsburgh's Automobile Patrol—The Frankstown avenue police station, Pittsburgh, Pa., is to have an automobile patrol, instead of the horse-driven ones which have been used.

Probst Kanawha Truck Manager—Karl Probst, formerly of the Lozier, Peerless and Seagrave companies, has been appointed general manager of the Kanawha Automobile Company, Charlestown, W. Va.

Cameron Joins Michigan Buggy—The Michigan Buggy Company, Kalamazoo, Mich., announces that W. H. Cameron has joined their forces, and will hereafter devote his engineering genius to Michigan cars.

Cunningham Disposes of Iowa Business—The Cunningham Automobile Company, Des Moines, Ia., agent for the American line, has disposed of its business to the Central Iowa Motor Company, a new organization.

Fisher Manager Studebaker Corporation—G. E. Lindsay will be succeeded, June 1, by F. E. Fisher as manager of the Studebaker Corporation of Canada, Ltd. Until May 7 the Canadian concern was known as the E-M-F Company, Ltd.

Lake Merges with Nixon & Raab—The consulting metallurgical business conducted by E. F. Lake at Bayonne, N. J., has been merged with the metallurgical engineering firm of Nixon & Raab, under the name of Lake, Nixon & Raab, South Orange, N. J.

Distributor of Briggs Magneto Appointed—The A. Hazen-Green Company, Inc., has been appointed distributor for Briggs magnetos for the following territory: Western part of Connecticut, all of the State of New Jersey, Long Island and Greater New York.

Former Agent Sues Woods Electric—The Woods Motor Company, Minneapolis, Minn., has brought suit against the Woods Motor Vehicle Company, Chicago, Ill., in the Minnesota courts for \$23,000, alleging that the latter did not live up to its guarantees.

Marburg in U. S. Rubber Building—Among the tenants who have engaged offices in the new U. S. Rubber Building at Fifty-eighth street and Broadway, New York, are Marburg Brothers, Inc., agents for the Mea magnetos and other imported automobile goods.

Harbach Secretary Wildwood Club—Harry C. Harbach, for a number of years prominently identified with Philadelphia motor car events, has been appointed secretary of the Wildwood Motor Club, and will have active supervision of the races to be held there July 4.

Stearns Enlarge Factory Offices—A large new addition to the offices of The F. B. Stearns Company, Cleveland, O., is just now being completed, and plans to give the factory additional facilities are also under way. This is in addition to the Royal Tourist factory, which is being operated by the Stearns people as their shop No. 3. All the Stearns plants are in full operation.

Fords Assembled in Des Moines—Ford automobiles are now being assembled in Des Moines. The Herring Motor Company, which controls the entire state and has 274 sub-agencies for the Ford, has been so held back by failure to get railroad shipments that all its orders are now being filled with knocked-down cars. C. E. Peterson, an assembling foreman from the Ford factories, has taken charge of the plant.

Des Moines Traffic Ordinance Illegal—The Des Moines, Ia., automobile traffic ordinance passed by the city council last fall to regulate speed is illegal, according to Police Judge Utterback and Superintendent of Public Safety Van Liew, who is a lawyer. Mr. Utterback says that the only way in which speed of automobiles can be handled is by filing charges of handling an automobile in a careless and imprudent manner. The ordinance was passed by a former city council.

Studebaker Sales Department Changes—There have been several changes in the sales department of the Studebaker Corporation's automobile division as a result of the resignation of Paul Smith and the appointment of Mr. Benson. Among those who are leaving the company is L. R. Actor, general auditor and assistant treasurer. Frank Smith, who was first assistant to Paul Smith at the E-M-F has also resigned. H. W. Miller has resigned as chief clerk in the Studebaker sales department.

Many Cars in Fresno—The number of automobiles which line the curbs of the streets in Fresno, Cal., is beginning to create a traffic problem.

Milwaukee Supply House—The Milwaukee Tire & Supply Company, Milwaukee, Wis., has taken the state agency for the Sears-Cross speedometer.

Armour Assistant Sales Manager—The Henderson Motor Car Company, Indianapolis, Ind., has appointed W. M. Armour assistant sales manager.

Schoen District Manager Westcott—F. C. Schoen has been appointed manager for the Westcott Motor Company with headquarters in Indianapolis, Ind.

Howard Cadillac Sales Manager—The Cadillac Motor Car Company, Detroit, Mich., has appointed E. C. Howard sales manager to succeed E. R. Benson.

Regal Opens Factory Branch—A factory sales branch has been opened in Indianapolis, Ind., by the Regal Motor Car Company. E. M. Callell is manager.

Eisner & Company Moves—Harry Eisner & Company, New England distributors of the Eisemann magneto, have opened new quarters at 1074 Boylston street, Boston, Mass.,

Goodrich Gets Indiana Certificate—A certificate to operate in Indiana, where \$714,286 of its capitalization is represented, has been issued to the B. F. Goodrich Company, Akron, O.

Willis Resigns from Studebaker—Frank B. Willis, manager of the Indianapolis, Ind., Studebaker sales branch, has resigned. Mr. Willis has not announced his plans for the future.

Ordinance Limiting Standing Time—The Pittsburgh, Pa., council committee on public safety has indorsed the ordinance limiting the length of time automobiles shall stand in one spot on the streets.

Case Oakland District Manager—A. W. Case, Jr., has been appointed district manager for the Oakland-Wisconsin Motor Car Company, in the entire Northeastern territory, with headquarters at Green Bay, Wis.

Wright McKen Manager—Edward W. Wright was recently appointed manager of the central sales district of the McKen Motor Car Company with offices in the Marquette building, Chicago, Ill.

Brass Company's Delivery Truck—The G. B. Essex Brass Company of Detroit, Mich., is planning to manufacture a light delivery truck on a large scale in the near future. The design for the car has been completed.

Covert Changes at Detroit—C. C. Hinkley, of the Covert Motor Vehicle Company, Detroit, Mich., has joined the engineering department of the Chalmers Motor Company. N. Gould Allen has succeeded him as sales manager for the Covert.

Sunderland Opens Office—M. E. Sunderland, Rochester, N. Y., distributor of the King, has opened an office in the Cutler building. Le Hardy Lindsay has been appointed to take charge of the service department of the firm's garage in East avenue.

Morton Packard Traveling Representative—C. E. Morton has been appointed traveling representative of the Packard Motor Car Company's sales department, with headquarters in Detroit, Mich. He will devote much of his time to Southern territory.

Arranging for B. C. Show—The British Columbia Automobile and Motor Trades Association has completed arrangements with the Vancouver Exhibition authorities for the use of the entire stock-judging pavilion, for next August's show.

Automobile Club Office Opens—The finely equipped Hotel Utica, Utica, N. Y., was recently opened, and the Automobile Club of Utica's office in the building is issuing reports of road conditions, route maps and weather reports for the benefit of automobilists.

Promotion for Graves—Fred Graves, with the Alvan T. Fuller Company, Boston, Mass., and until recently in charge of the truck department, was promoted recently to the position of sales manager to take the place left vacant by the resignation of A. T. McGarrett.

Yeats Resigns from Abbott—G. H. Yeats, assistant sales manager of the Abbott Motor Company, Detroit, Mich., has resigned, leaving on June 1. Mr. Yeats' resignation is to enable him to assume active control of the G. H. Y. Auto Supply Company, which he has just organized.

Colgan Manager Waverley Electric—Henry Colgan, formerly connected with the Hite D. Bowman Company, Louisville, Ky., is the new manager of the Waverley Electric Company. He succeeds Wright Barr, who goes to the factory at Indianapolis, Ind. Mr. Barr will travel out of the Hoosier city as a special representative of the Waverley concern.

Bradford Resigns from Buick—J. R. Bradford has resigned his position as manager of the commercial department of the Buick Motor Company's Boston, Mass., branch to become associated with Howard Blossom, of St. Johnsbury, Vt., who has formed the Consolidated Automobile Company.

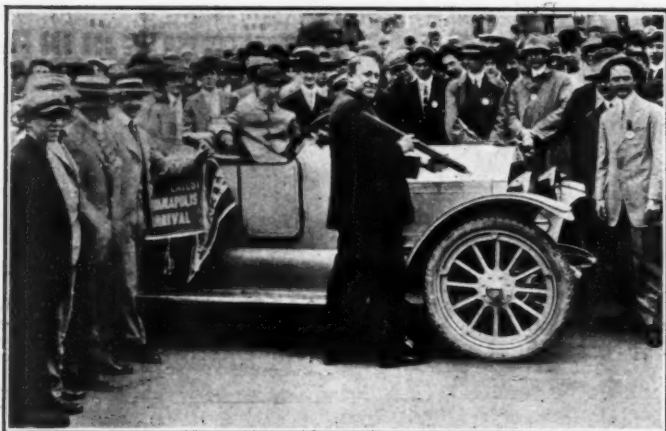
Transports Big Flagpole—A flagpole 87 feet long and weighing 5 tons was carted recently from Newark, N. J., to Mendham, N. J., by a White truck. The pole has a total length, set up, of 140 feet. The route from Newark to Mendham is especially difficult, as it includes a number of very steep grades.

McKinney With Dayton Truck—C. C. McKinney has become identified with the Chicago branch of the Dayton Automobile Truck Company, Dayton, O., with headquarters at 1700 Wabash avenue, Chicago, Ill. Mr. McKinney will superintend the transportation department of the Chicago branch of the company.

Gwilliam Roller Bearing Representative—The Standard Roller Bearing Company, Philadelphia, has arranged with the Gwilliam Company, Broadway and Fifty-eighth street, New York City, for the sale of their steel, brass and bronze balls, and ball and roller bearings, and are arranging to carry a stock in New York to take care of all immediate requirements.



White truck which transported a 140-foot flagpole from Newark to Mendham, N. J.



Mayor of Indianapolis christening the first Henderson car

Dahl Tire in Baltimore—The distributing station for the Dahl punctureless tires for Maryland and Virginia has been established in Baltimore, Md.

Milwaukee Orders KisselKar Truck—The municipal waterworks department of Milwaukee, Wis., has ordered two 1½-ton KisselKar trucks from the KisselKar Company for general transportation service.

Greene with Metzger Company—E. M. Greene, district manager of the Buffalo, N. Y., branch of the Studebaker Corporation, has resigned to accept a similar position with the Metzger Motor Car Company of Buffalo.

Berg with Miser Schaff Company—Louis Berg, designer of the first Babcock automobile, has resigned from the Babcock Manufacturing Company to become secretary and treasurer for the Miser Schaff Company, Watertown, N. Y.

Enforcing Ohio's Light Law—Steps are being taken in many municipalities to have a better enforcement of the Ohio State law requiring all motor cars to carry three lights in the night while on public highways of the state.

Minton with Hustis Brothers—R. R. Minton, for several years sales manager of the Beaver Manufacturing Company, of Milwaukee, Wis., has been appointed sales manager of the Hustis Brothers Company, distributor for the King and Stevens-Duryea.

Ford's New Des Moines Plant—G. L. Herring, Des Moines, Ia., distributor for the Ford car, will construct a \$50,000 brick building to house the Herring Motor Company, the Herring Motor and Supply Company and the Iowa assembling plant of the Ford Company.

Graham with Westfield Company—John A. Graham, formerly superintendent of assembling and testing at the Brightwood Motor & Manufacturing Company, Springfield, Mass., has been appointed engineer and superintendent of the Westfield Motor Truck Company.

Ellis' Banquet to Stockholders—H. W. Ellis, the new president of the Johnson Service Company, Milwaukee, Wis., manufacturing commercial vehicles, tendered a banquet to the stockholders, directors, superintendents and branch house managers at the Hotel Pfister recently.

Land Given to Columbus A. C.—Baldwin Gwinn, a member of the Columbus, O., Automobile Club, has given the club a tract of 23 acres located on the National Pike, about 20 miles west of Columbus. It is proposed to erect a clubhouse on the tract, to cost about \$3,500.

New Mitchell Sales Manager—N. R. New, sales manager of the Milwaukee, Wis., branch of the Mitchell Automobile Company, has been appointed general manager of the branch. The branch house is now being tripled in size, two stories being added to the present building and the ground area considerably extended.

Automobile Show at State Fair—Iowa will have an automobile show in connection with the State Fair which is to be held in Des Moines the last week of August. W. E. Moyer, C. J. Van Vliet and George Harritt are managers of the show which will be staged in the fireproof arena in the great amphitheater at the fair grounds.

Taxicab Service in Maine—Portland, Me., is the latest New England city to join the ranks of cities having taxicab service, a new company having begun operations there recently under the management of W. D. Sawyer and G. C. Whitmore. Five 1912 taxicabs have been installed. The company has a fireproof garage.

Tire Doctor in New Orleans—With the opening of the plant of the Duval Tire Rebuilding Company, New Orleans, La., will have facilities for renewing injured or worn tires. The plant is in charge of S. P. Larabee. A feature of the service is the maintenance of a mechanism squad who will answer calls in any part of the city.

Virginia's Registration Larger than 1911—Up to the closing hour in the office of the Secretary of the Commonwealth, Richmond, Va., there has been a total of 4,163 automobile licenses issued in this state for the year 1912. With less than 5 months of the year gone, the total is ahead of the entire year of 1911, when 4,020 licenses were issued.

Indianapolis Welcomes Henderson—Preceding the 500-mile race at the Speedway, Indianapolis turned out last week to welcome the advent of the Henderson car, the city's first low-priced product in the automobile line. A large parade, led by a squad of police and the Indianapolis Military Band, escorted the car through the streets. At Monument Place, Mayor Shank gave a short address and formally christened the car with a huge pencil.

Motor Trade Trip—The Trade Extension Committee of the Boston, Mass., Chamber of Commerce has made arrangements for an automobile trade trip from Boston through western Massachusetts, Vermont and New Hampshire which will occupy five days, June 10-15. The members of the Boston party will meet business men and merchants at a number of the cities on the route and addresses will be made by officers of the local boards of trade and by the visitors establishing cordial trade relations.

Automobile Incorporations

AUTOMOBILES AND PARTS

ALBANY, N. Y.—Northern Motor Car Company; capital, \$25,000; to manufacture automobiles. Incorporators: R. Dudley Cannon, Arthur P. James.

BOSTON, MASS.—Roberts & Sherburne, Inc.; capital, \$30,000; to engage in the automobile business. Incorporators: E. R. Sherburne, F. L. Roberts.

BUFFALO, N. Y.—Manufacturers' Service Company; capital, \$10,000; to manufacture engines and other machinery, especially for the manufacture of automobiles. Incorporators: Walter J. Minehan, Norbert W. Huntington, Daniel E. Meegan, N. Barton Perry.

CAMBRIDGE CITY, IND.—Auto Inn; capital, \$10,000; to deal in automobiles. Incorporators: Abiram Boyd, J. A. Boyd, J. L. Boyd.

CAMDEN, N. J.—General Auto Company; capital, \$50,000; to manufacture and deal in automobiles. Incorporators: Frank A. Kuntz, F. Stanley Sauerman, Frank S. Mussey.

CAMDEN, N. J.—National Automobile Sales Company; capital, \$300,000; to deal in automobiles. Incorporators: Edward W. Rick and others.

CHARLESTON, S. C.—Robinson Automobile Company; capital, \$20,000; to engage in the automobile business. Incorporators: C. B. Huet, Walter B. Wilbur.

CHICAGO, ILL.—Ohio Motor Car Distributing Company; capital, \$5,000; to manufacture and deal in automobiles. Incorporators: Joseph Slotow, Samuel C. Wood, Fred C. Churchill.

CLEVELAND, O.—Eisemann Automobile Company; capital, \$10,000; to deal in automobiles. Incorporators: Sidney N. Weitz, Jno. W. Campbell, Harry Pott, H. C. Cummings, Alvin Boehmer.

LOUISVILLE, KY.—Stanley Automobile Company; capital, \$2,000; to engage in the automobile business. Incorporators: E. C. Walker, George H. Laib, W. B. Young.

MANISTEE, MICH.—Manistee Motor Company; capital, \$51,000; to manufacture and deal in automobiles. Incorporators: Charles Elmendorf, George M. Burr.

HUNTINGTON, IND.—Big Four Auto Company; capital, \$3,000; to sell automobiles. Incorporators: Daniel Shinkel, Lewis Shinkel, William Richardson.

MARION, IND.—Bruner Manufacturing Company; capital, \$1,000; to operate a machine shop and make automobile parts. Incorporators: S. E. Bruner, William Guthrie, J. P. Myers.

NASHVILLE, TENN.—Stanley Automobile Company; capital, \$2,000; to

News of the Garages

Barre Has Another Garage—A garage has been opened in Barre, Pa., and will be known as the Barre garage.

Alling Opens Modern Garage—F. B. Alling, of New Haven, Conn., has organized the Alling Garage Company and has opened a modern garage.

Sterritt Electric Opens Garage—The Sterritt Electric Company has opened a new electric garage in East Salt Lake City, Utah. L. G. Sterritt is manager.

Enterprise Coal Plans Garage—The Enterprise Coal Company, Baltimore, Md., agent for the Gramm truck, has had plans prepared for a new fireproof garage.

Garage Makes Concrete Addition—A concrete block addition has been added to the structure occupied by the New England Garage Company at Hartford, Conn.

Colorado Springs Franklin Garage—G. W. Blake, Franklin dealer in this territory, is erecting a modern garage and salesroom on Nevada street, Colorado Springs, Colo.

Howards' Garage Opens Business—The new Boulevard garage for the Howards Company at New Haven, Conn., is about ready for occupancy. It has more than 3,500 feet of floor space.

Garage Men Guarding Against Fires—Davenport, Ia., garage owners have united in a movement to keep their garages free from accumulations of oil waste as a prevention against fires.

Hessen Company Constructing Garage—A. W. Hessen & Company, Elko, Nev., are constructing a large automobile garage and will conduct a general automobile business. James Warden is manager.

Repair Shop in Driggs—The Driggs Garage has been opened in Driggs, Idaho. It is under the management of H. G. Winger and will carry on a general automobile repair and accessory business.

Milwaukee New Garage Erecting—The George Brumder Estate of Milwaukee, Wis., has started work on the construction of a new \$45,000 garage, which will be located at Eighth and Wells Streets, Milwaukee, Wis.

Bessinger-Hoover's Model Garage—The Bessinger-Hoover Garage Company, Sheboygan, Wis., has installed a large oxy-acetylene welding apparatus and is welding broken crankshafts as well as cylinder heads and other castings.

Garage to Be Opened—Ground will be broken for the erection of a brick building in Mt. Lebanon, Pa., to be used as a garage. W. B. Phillips will be in-charge. It is expected that it will be finished and ready for occupancy by the last of July.

Albany Garage Permit Record—This has been a record week in the bureau of buildings for Albany, N. Y. Permits for twenty-one structures were granted, the largest being for an addition to the Albany garage company building on Howard street.

Bristol Gets New Garage—Homer H. Judd and James H. Davis, who recently leased land on Riverside avenue, Bristol, Conn., have approved plans for a garage on the lot that will be 100 by 80 feet, one story in height, and of brick and concrete construction.

Leases Block Front for Garages—Thomas F. Devine has leased from the New York Central Railroad the block front on the west side of West End avenue, between Sixty-third and Sixty-fourth streets. The lessee will erect four garages, each to cover a plot 50 by 100 feet.

Somerville to Have Two Garages—The Somerville, Mass., building department has just approved permits for two large public garages in that city, one of which will be conducted by the Jameson Brothers and the other by D. L. Downey. Each building will cost in the neighborhood of \$10,000.

Davenport Company Outgrows Quarters—The Union Motor Company, Davenport, Ia., agent for the Oldsmobile and the Buick, 114 Brady street, is erecting a new garage at Third and Warren streets, its present quarters having been outgrown. The company expects to be in its new location by August 1.

Providence Garage Burned Completely—The Kendall garage at Broad and Potter streets, Providence, R. I., was recently destroyed by fire. The structure was said to be fireproof, but destruction was almost complete. While many cars could be saved, the loss caused by the damage done to the building amounts to about \$30,000.

Baker Brings Out New Model—The Baker Motor Vehicle Company, Cleveland, O., has put on the market a new model extension brougham of the type in which all the passengers face forward. It has the same general lines and appointments as the model Y brougham. In fact, it was the model Y that created the demand for a brougham of slightly smaller dimensions with the seats facing forward. The first deliveries of the new model will be made in June.

Automobile Incorporations

buy, sell and rent automobiles. Incorporators: E. C. Walker, George H. Laib, W. B. Young.

NEW YORK CITY—A. B. Manufacturing Company; capital, \$200,000; to conduct an automobile business. Incorporators: Max M. Kotzen, Jacob Lichtenstein, Ralph H. Raphael.

NEW YORK CITY—Veitch Motor Manufacturing Company; capital, \$200,000; to manufacture motors, pleasure and commercial automobiles, etc. Incorporators: James S. Harris, Percival J. McIntosh, Charles H. Toy.

POUGHKEEPSIE, N. Y.—Kirchner Motor Company; capital, \$2,500; to engage in the automobile business. Incorporators: Otto Kirchner, John E. Townsend.

TOLEDO, O.—Dennis Motor Company; capital, \$25,000; to manufacture automobiles and motors. Incorporators: C. H. Dennis, C. W. Close, Allen E. Reid, R. S. Woodrow.

GARAGES AND ACCESSORIES

NEW YORK CITY—American Carburetion Company; capital, \$5,000; to manufacture carburetors and parts thereof. Incorporators: William H. Woolle, Albert G. Hubbell, James F. Bisselle.

NEW YORK CITY—Audubon Auto Service Company; capital, \$500; to conduct a garage and repair shop. Incorporators: Michel P. Caffé, Edmond Huerstel, Julius M. Ferguson.

NEW YORK CITY—Gotham Sporting Goods Company; capital, \$10,000; to deal in automobile supplies and accessories. Incorporators: Benjamin Goodman, Henry Ephraim, Ben Stacy.

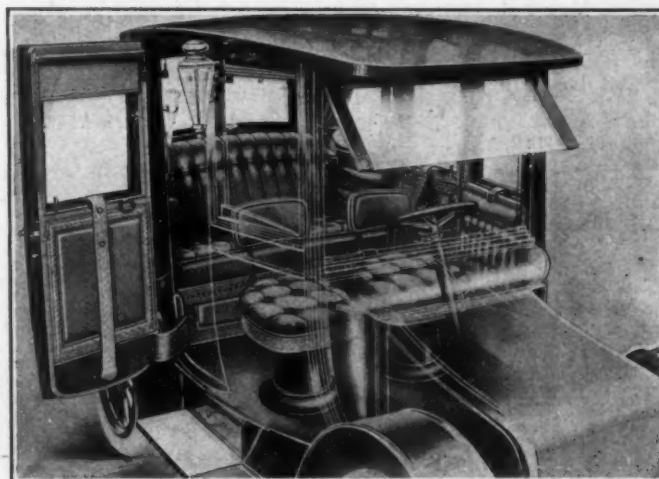
NEW YORK CITY—Robert Stock Auto Spring Wheel Company; capital, \$300,000; to manufacture mechanical wheels for automobiles. Incorporators: Robert Stock, Augusta M. Stock, Joseph F. Bokelmann.

TOLEDO, O.—Peerless Rubber & Tire Company; capital, \$10,000; to deal in automobile accessories, tires and supplies. Incorporators: R. G. Wierman, John F. Hickman, Edward Unsblatter, J. R. Humphrey, William H. Woods.

UTICA, N. Y.—Whitesboro Motor Car & Garage Company; capital, \$1,000; to conduct a garage and repair shop. Incorporators: J. Webster Rogers, Mabelle G. Malsan, Adrian S. Malsan.

CHANGES OF CAPITAL

DAYTON, O.—Coffield Motor Washer Company; capital decreased from \$200,000 to \$50,000.



X-Ray view of new Baker electric brougham with all seats facing forward

Factory Miscellany



How the plant of the Havers Motor Car Company, Port Huron, Mich., will look when additions are completed

PLANNING Additions to Havers Plant—The factory of the Havers Motor Car Company, Port Huron, Mich., is to be considerably enlarged, according to the present plans of the company. Work on additions will probably begin some time in the fall. The plant is devoted exclusively to the manufacture of the Havers Six-44, which was first placed on the market about two years ago.

At Home in Grand Rapids—The Grand Rapids Motor Truck Company, formerly the Decatur Company, has started completing its trucks at its new plant in Grand Rapids, Mich.

Aluminum Founders Resume Activities—The Aluminum Castings Company whose Milwaukee, Wis., plant has been closed for several weeks due to labor troubles, has reopened the manufacture of aluminum castings at Manitowoc, Wis.

Cadillac Company Adds Plant—The Cadillac Motor Car Company, Detroit, Mich., has purchased the plant of a small manufacturing company adjacent to its own. The newly acquired property will be made a part of the company's factory.

Century Electric in Embryo—Ground will be broken in a few days for a new automobile factory at Woodward and Lothrop avenues, Detroit, Mich. J. Wynne is president and J. Gillespie, of the Gillespie Automobile Sales Company, is general manager.

Not to Leave Clintonville—The Oshkosh, Wis., Chamber of Commerce has been advised by W. A. Olen, president of the Four Wheel Drive Automobile Company, Clintonville, Wis., that the company is not contemplating removal of its plant from Clintonville.

Sandusky Is Spreading Out—The plant of the Sandusky Auto Parts & Motor Truck Company, Sandusky, O., is to be

enlarged in the near future and the working force will be augmented by the addition of 250 men. A deal was recently closed to furnish 2,300 motors for one concern.

Lamp Company to Move—The Castle Automobile Lamp Company, Amesbury, Mass., will move soon from that city to Richmond, Ind., where the company has purchased the factory formerly occupied by the Richmond Manufacturing Company. The company employs about 200 men.

Truck Firm Buys Building—For a consideration of \$350,000 the General Industrial & Manufacturing Company has purchased the Laycock Industrial Building in Indianapolis, Ind. The building has a floor space of 380,000 square feet, and several manufacturing concerns are quartered in it at present. The new owner was organized some months ago to manufacture a line of gasoline motor trucks.

Phipps Brings Out Electric—J. G. Phipps, Detroit, Mich., has brought out an electric car with some distinctive features, which will be manufactured in this city as soon as the organization of a company can be perfected. Associated with Mr. Phipps in the enterprise is C. W. Whitson, one of the men who organized the Krit Motor Car Company. The new car has a 107-inch wheelbase.

Willys-Overland Expands Again—The Willys-Overland Company, Toledo, O., has let the contracts for \$40,000 worth of additions to its plant. Besides the additions to the factory proper, additional office space is being provided, as the present quarters are becoming badly cramped. There will be three buildings, one a three-story structure of reinforced concrete, 92 by 162 feet, to cost \$22,000. In addition to this, there will be a one-story brick building, 68 by 82 feet, to cost \$8,000, and a one-story concrete structure, 41 by 30 feet, which will cost about \$4,800.

Lauth-Juergens Builds New Home—A new factory for the Lauth-Juergens Company will soon be erected at Fremont, O. The new building will be 60 by 200 feet.

Motor Company Opens Business—The Niagara Gasoline Motor Company, of Dunkirk, N. Y., which is capitalized at \$50,000, will soon commence to erect its factory in that city.

Ohio Manufactured in Canada—The Canadian Ohio Motor Car Company of Toronto, Ont., has secured the manufacturing and selling rights for the Ohio car in the Dominion. A modern factory will soon be in operation at Colborne.

Hauls Four Times Its Capacity—A 3-ton Lauth-Juergens truck recently hauled 11 tons of bricks from Ballville, O., to Fremont, O., in about one-half hour. Three trailers were used to carry the load which was propelled by the truck.

Builds Pleasure Cars and Trucks—The Brightwood Company of Springfield, Mass., which was recently formed by the merger of the Springfield Metal Body Company and the Brightwood Manufacturing Company, has acquired the American manufacturing rights for the Italian-designed S. P. A. car.

Canadian Automobile Maker Expands—The Russell Motor Car Company, Toronto, Ont., has completed its plan for the addition of a new part of its factory. The annex will consist of a machine shop 60 by 170 feet, which will be equipped with the latest machinery, and will cost \$100,000. In the annex the company will employ 200 more men, making its total force 1,200 workers.

Starter Company Extends Plant—The United States Light & Heating Company, Niagara Falls, N. Y., has awarded a \$70,000 contract to the Leonard Construction Company, of Chicago, Ill., for the erection of an annex to the factory which is to serve as a machine shop. The addition will be 320 by 56 feet, and three stories high. The Eveland self-starter is made by this company.

The First Franklin Car—June 23 will be the anniversary of an event of much importance in the history of the Franklin Automobile Company, Syracuse, N. Y. On that day, 10 years ago, The H. H. Franklin Company (then the official title of the concern) sold to S. G. Averill, of New York City, its first car, receiving in exchange a check for \$1,200. The old machine is shown in the accompanying illustration, two of the factory officials having spent an enjoyable afternoon recently navigating the antique around the streets of Syracuse.

Large Miller Carbureter Factory—The New Miller Manufacturing Company, maker of the Miller carbureter, has established its factory and general offices in the Murphy building, East Georgia, Indianapolis, Ind. The establishment of the new factory with a capacity of more than 70,000 carbureters per year is expected to overcome the question of adequate production to supply the demand for the Miller carbureter, which is operated mechanically, and with adjustment once made gives a correct mixture at all engine speeds. F. C. Fairbanks is president of the company, A. W. Nash, vice-president, K. K. Parrot secretary, and L. H. Colvin general factory manager.

Motor Fire Apparatus

Frisco's Second Pierce Arrow—San Francisco, Cal., has bought its second Pierce Arrow. It is to be used by Thomas R. Murphy, chief of the fire department.

Albany Installs Motor Apparatus—Albany has been added to the list of cities having motor fire apparatus by the installation of a motor-driven fire engine.

Amsterdam Purchases White Truck—The Amsterdam, N. Y., fire department has purchased a motor fire engine for the local department from the White Automobile Company.

Pittsburgh's Fire Apparatus Contracts—The Knox Automobile Company and the American-LaFrance Company re-

New Automobile Agencies

PLEASURE CARS		
Place	Car	Agent
Akron, O.	Vellie	H. F. M. Mfg. Co.
Auburn, N. Y.	Havers	Auburn Automobile Co.
Buffalo, N. Y.	Lozier	R. G. Danahy & Co.
Columbia, Pa.	Franklin	W. T. Garrison
Findlay, O.	Krambler and Detroler	Collingwood & Edwards
Hagerstown, Md.	Franklin	Antietam Garage Co.
Hamilton, O.	Vellie	Central Motor Co.
Kansas City, Mo.	Lozier	E. P. Moriarty & Co.
Mansfield, O.	Vellie	C. H. Voegelé
Minneapolis, Minn.	Havers	E. F. Chase Co.
Montreal, Que.	Nyberg	J. O. De Vaux
Ottawa, Ont.	Flanders and E. M. F.	Wyllie, Ltd.
Owens, O.	King	J. D. Owens & Son
Passaic, N. J.	Havers	Charles Speer
Sacramento, Cal.	Oldsmobile	L. B. Harvey
Salem, Mass.	Buick	Church-Donovan Co.
San Jose, Cal.	Oakland	W. J. Boschken & Co.
Sydney, Australia	Havers	Commonwealth Motor Co.
Troy, N. Y.	Havers	Vanderheyden Garage Co.

cently received the contracts to furnish six motor fire apparatus, three each, at \$5,250 apiece, to the city of Pittsburgh, Pa.

Fire Motor for South Orange—A recommendation for the purchase of a combination pump and hose carrying automobile truck for the fire department of South Orange, N. J., was made by Fire Chief William E. Meredith in a report to the township committee recently.

Lindsey with American LaFrance—R. J. Lindsey, manager of the Elmira, N. Y., branch of the A. M. Zimbrich automobile agency, has resigned that position and entered the employ of the American-LaFrance Fire Engine Company. He will test motor-driven apparatus.

Straws Show the Way—The engraving on the papers of honorable discharge from the fire department in Dunkirk, N. Y., has been changed from the representation of a team of horses dashing with a steamer to a representation of the new motor fire engine responding to an alarm.

Albany's Motor Fire Apparatus Show—Manufacturers of motor fire apparatus throughout New York State have been invited to exhibit at the annual convention of the State Association of Fire Chief Engineers to be held in Albany, N. Y., June 20-21. About 150 fire chiefs will attend the exhibition of motor fire apparatus and the reading of papers on fire prevention.

Columbus Purchases Motor Equipment—Director of Public Service Kinnear, of Columbus, O., has decided upon the purchase of a combination hose cart and chemical engine and six tractors for the use of the Columbus fire department. The tractors will be attached to the present horse-drawn fire engines. The issue of \$50,000 bonds has been sold and the proceeds will be used for the purpose.



First air-cooled Franklin, turned out in 1902

Newest Ideas *among the* Accessories

Mechanical Siren Bulb Horn; Large Adjustable Screw-Driver; New Automatic Carburetor; Recent Spark Plug Developments; Electro-Plating Compounds; Glass-Celluloid Goggles; Michelin Repair Outfit

Vixen Mechanical Siren Bulb Horn

A SMALL mechanical siren horn which is operated by a bulb is manufactured and sold under the name Vixen by the Motor Car Equipment Company, Warren street, New York City. The horn, Fig. 1, consists of a siren which is interposed between the bulb and the sound intensifier. To the right in the illustration the intensifier with the siren attached to it is shown, the bulb being illustrated below it. An enlarged view of the siren mechanism is seen at the left of the figure. The body of the brass portion is screw-threaded at both ends and at the end fitting into the intensifier carries a brass plate bored with six slanting cores. A small hard-rubber disk H cored with six holes of opposite slant is mounted on the needle stem N. If the bulb which is attached at the end B is pressed, air is forced through the cored brass plate and strikes the cored rubber disk which is thereby thrown into violent revolution. As it rotates, it interrupts the stream of air coming out of the brass cores, producing a sound which is the louder and higher in pitch the stronger the air current caused by pressing the bulb. The horn is made of brass throughout and is highly polished. The bulb is of black rubber.

Bohlman Special Screw-Driver

The idea of the Bohlman screw-driver, Fig. 2, is to insure a good grip of the tool on a screw which otherwise would be too large to handle. The shaft of the screw-driver is hollow and contains a steel rod which terminates in the screw-driver head shown in the illustration. Through the other end of the rod a pawl is pinned, which is pressed by a spring against the ratchet contained in the handle. If the button visible in Fig. 2 is pressed the pawl is disengaged from the ratchet and, by shifting the button, pawl and inner rod are turned, so that the small screw-driver head takes a hard grip on the screw. If a very large screw is put in place or removed this should be done slowly to avoid all chance of injuring the inner rod. This tool is sold by the Motor Car Equipment Company, Warren street, New York.

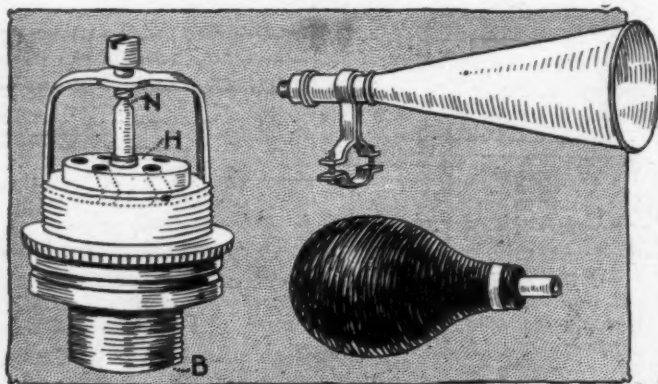


Fig. 1—Vixen bulb-operated siren horn and view of the small siren mechanism

Breeze Straight-Line Carburetor

As a step toward foolproofness the Breeze Carburetor Company, Newark, N. J., now offers its latest model of carburetor, the type SL (straight line). This carburetor is a concentric float design and uses a single jet of gasoline. The two new features which make the carburetor in a measure automatic are: the method of adjusting the gasoline flow and the auxiliary air mechanism. The needle valve stem governing the flow of fuel terminates at its upper end in a flat surface forced by a spring against a beveled one which is part of the adjusting screw; the latter passes through a thread in the side wall of the carburetor, so that, if the screw is turned one way or the other the gasoline flow is either increased or decreased, but the needle is prevented from opening beyond an advantageous maximum by a locking device on the adjusting screw. The auxiliary air intake is so constructed that it always opens a little at high speeds when there is need of an additional supply of air.

Two of the Latest Spark-Plugs

In Fig. 4 the Sturdy spark-plug, made by the Sturdy Manufacturing Company, 2637 Michigan avenue, Chicago, Ill., is shown. This plug is of the single-spark, porcelain insulation type, and is distinguished by the special effort which, in its manufacture,

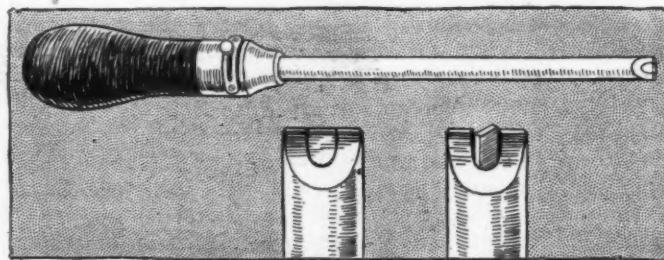


Fig. 2—Bohlman screw driver. View of the whole device and of head in two positions

is made to secure perfectly tight joints. The illustration shows a double porcelain core, the inner one P and the outer one P1. The inner insulation is held in place by the brass bushing B and the shell S between which an annealed copper gasket is placed. Gastightness between the insulation P and the bushing B is insured by a countersunk copper-asbestos gasket G1. The outer insulation P1 seats on the bushing against which it is pressed by an arched double spring washer W held positively in place by the nut N1 and the binding nut N. The positive electrode which passes through the inner porcelain P is pressed against the lower end of the insulation by the two flat metal washers W inside the plug, which in turn are held against P by a hexagonal nut. All these features tend to keep the plug tight under all conditions of service.

Another new spark-plug, the Flash Ball type, is illustrated in Fig. 5. This plug is manufactured by the Toledo Automobile

Devices Company, Toledo, O. It consists of a ball-shaped positive electrode P attached to the end of a terminal, a porcelain insulation and a shell which carries four negative electrodes Q. The porcelain is held centrally in position in the shell by a brass bushing. The portion C₁ of the electrode P bears against the lower end of the porcelain, gastightness being obtained by the felt washer F. The cap C seats on the top portion of the porcelain and is held tightly against it by the cap nut W. Between the latter and the terminal screw the high-tension wire from the magneto is forced in place. If C₁ bears tightly against the porcelain and C and W are also tightly in place, the electrode P is held out of contact with the negative sparking points, giving four spark gaps, while a short-circuit is avoided.

Voltite Electro-plating Powder

The American Voltite Company, 225 West Thirty-ninth street, New York City, manufactures electro-plating powders which may be applied to any metal save aluminum to plate it with gold, silver or nickel. The process simply consists in wetting the powder with water and rubbing it over the metal surface to be plated, which produces an equal and lasting metal plating the thickness of which is proportionate to the amount of powder used. Before plating the metal, it is first cleaned with a polish to eliminate all foreign matter, after which it is given a rubbing with Paris white or a like material to remove the grease left on it by the polishing compound. Then the electro-plating powder, which is a grey material of the fineness of talc, is mixed with a little water and applied to the metal to be nickel-, gold- or silver-plated. As soon as this is done, the electrolytic action



Fig. 3—PAM Autospec glasses which are made of glass and celluloid—no metal being used

between the metal and the powder sets in, and the nickel, gold or silver is rapidly deposited on the metal. The deposit consists of the pure metal, containing neither copper nor mercury, as may be seen by dissolving the base in some acid which does not attack the plating. For instance, if gold-plated zinc is exposed to nitric acid, the gold remains in shape of a thin solid leaf. The Voltite plating, which is obtained ever so much quicker than by galvanic electro-plating, is as durable as the ordinary kind. The powders come in cans for nickel- and silver-plating and in a small bottle for gold-plating.

PAM Autospec Light Glasses

Attempting to displace the old-fashioned though useful goggles which are now in such general use, Paul E. Meyrowitz, Fifth avenue, New York City, has designed the PAM Autospec glasses, Fig. 7. This pair of spectacles is distinguished by its light weight and comfortable design, being made of a celluloid frame and high-grade lenses. The glasses, as well as the frame, come in several colors, tan, gray, blue and brown, so that a wide range of taste may be suited. No metal whatever is used in the construction of the Autospec, which sets up a notable difference between this and other types of glasses, while the size of the glasses proper is such as to fully protect the eyes.

The Michelin Tire Repair Kit

The Universal tire and inner-tube repair kit is just being offered to the automobile public by the Michelin Tire Company, Milltown, N. J. The outfit comes in a metal case 6 by

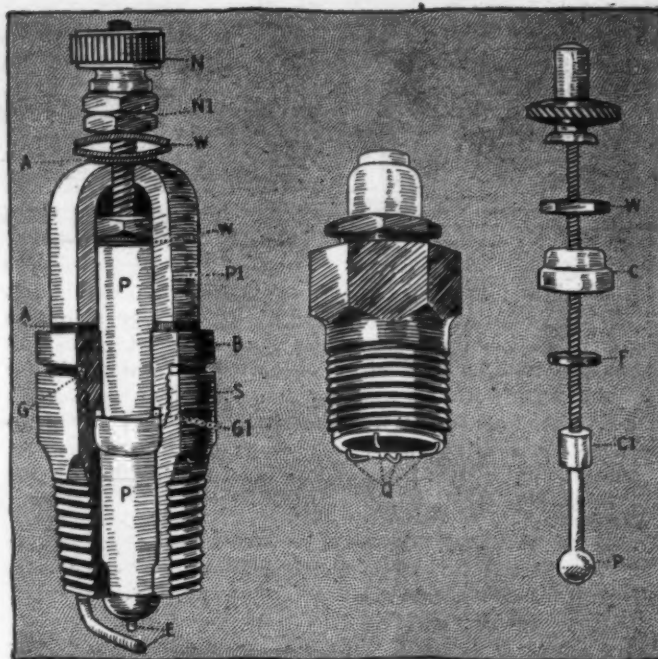


Fig. 4—Part section Sturdy spark-plug. Fig. 5—Disassembled view of Flash Ball spark-plug

3 by 3 1-2 inches, containing a 2-ounce can of Michelin mastic and cement, six assorted red Para rubber tube patches, a blow-out patch, a sheet of emery cloth and a box of soapstone. The mastic included in the equipment is a plastic compound which is filled into the tire wounds and hardens quickly.

New Trade Literature

A little periodical, *The GMC Insider*, is published by the General Motors Company, Detroit, Mich., in the interest of the products of its various companies.

Follow-up cards for prospective buyers of Stearns-Knight cars are sent out by the F. B. Stearns Company, Cleveland, O. They illustrate the situation of slide vs. poppet valve in a humorous way which, by the way, is rather clever. The set of six cards will be sent free of charge by the Stearns company to any reader of *THE AUTOMOBILE* upon application.

The April number of the *Everitt Diamond*, published by the Metzger Motor Car Company, Detroit, Mich., contains several interesting stories on making and selling Everitt cars. It also gives some suggestions for follow-up letters which should prove helpful to every salesman.

Annular ball bearings and the proper method of using them are described in the latest publication of the J. S. Bretz Company, 250 West Fifty-fourth street, New York City, importers of F. & S. ball bearings.

The *Henderson Bulletin*, published by the Henderson Sales Company, Indianapolis, Ind., should prove of interest and usefulness to two classes of people. First, Cole owners and agents; second, competitors desirous of preparing a smart little sheet which after passing through the mails and reaching the addressee will "get there." The paper will be sent to any automobilist interested in trade, manufacturing and touring information.

Marathon cars and their work are described in the *Pace Maker*, which is brought out by the Marathon Motor Works, Nashville, Tenn. It is a 16-page affair.

Hot boxes are unnecessary where the right type of bearings are used in woodworking machinery, according to the Hess-Bright Manufacturing Company, Philadelphia. A 32-page booklet published by the concern deals with the equipment of the sort of machinery mentioned above, and describes in detail the ball bearings used for this work.

Patents Gone to Issue

INTERNAL Combustion Motor—A two-cycle design which may be used for burning hydrocarbon or oil fuel.

This patent refers to a design like the one shown in Fig. 1. It consists of an engine cylinder C which has an exhaust port E and an air inlet port A. In the cylinder reciprocates a piston P which is connected by a connecting rod C2 to the crankshaft C1; the latter works inside an airtight engine base B, on which the cylinder is mounted. A passage P1 is provided to connect the base chamber to the cylinder interior.

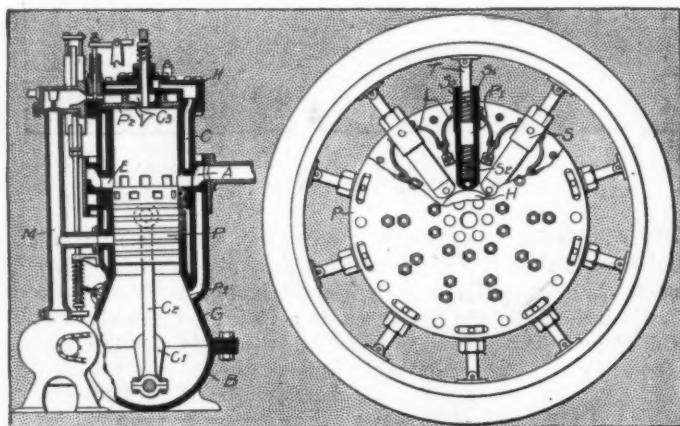


Fig. 1—Lake internal-combustion motor. Fig. 2—Oldham telescopic spring wheel

A cylinder head H which has a recess in its lower side is mounted on the top portion of the cylinder casting. Between cylinder and head a plate P2 is provided. A central opening in the plate affords a seat for the valve V which governs the admission of a fuel-air mixture to the cylinder. Behind the valve V a chamber C3 is formed in the cylinder head; this chamber communicates with an injector transporting a mixture of fuel oil and air into the chamber. Air is supplied to the injector through a pipe means M which has a branch leading into the base chamber.

No. 1,026,871—to Simon Lake, Milford, Conn. Granted May 21, 1912; filed March 21, 1911.

Resilient Wheels for Automobiles—Comprising telescoping spokes containing coil springs and connected by leaf springs.

This wheel consists of a hub H, telescoping spokes S and two plates P secured to the hub and between which the spokes are located. Between each pair of spokes a leaf spring L is secured to the plates, bearing circumferentially against the spokes. In the plates are guide slots concentric with the swing of each spoke. Lugs are carried by the spokes and adapted to register in the slots mentioned, thereby limiting the movement of the parts. The telescoping portion T of each spoke S ends in a piston P1 fitting snugly into the shell portion S1 of the spoke; helical springs S2 in the spoke shells bear against the ends of the shell portions.

No. 1,026,822—to Frederick C. Oldham, Brooklyn, N. Y. Granted May 21, 1912; filed October 19, 1910.

Automobile Electric Headlight—In which the lamp is inserted through a central opening and held in place by a block forming part of the reflector.

This lamp, Fig. 3, consists of a single metal casing C

which has a polished reflector surface on its inside and means M on the outside to hold the electric bulb in place. The latter is inserted into the casing through an opening of suitable size and is supported in its position by means of a block B which fits into the opening and closes it.

No. 1,027,306—to Percy C. Avery, Milwaukee, Wis. Granted May 21, 1912; filed February 4, 1911.

Nut-Lock Mechanism—A longitudinal slot in the bolt accommodates a pin which bears against a cam surface.

This nut lock, Fig. 4, comprises a threaded bolt B which has a longitudinal recess R, the latter having walls rising at about right angles to each other. The recess terminates in a cam surface C, which passes into the bolt surface proper. A pin P is seated in the recess R, having a lateral play limited by the side walls described above. The inner end of the pin bears on the cam surface, and is thereby cammed into binding contact with the nut N.

No. 1,027,001—to Leander Rice, Kahlotus, Wash. Granted May 21, 1912; filed July 13, 1910.

Wrench Construction—In which the movable jaw is locked on the shank by a pawl and ratchet mechanism.

This patent describes a wrench, Fig. 5, which consists of a toothed shank S terminating at one end in a jaw J. An adjustable jaw body B is slidably mounted upon the shank; this body is provided with a recess R, the sides of which form transverse grooves G. A yoke Y straddles the shank and has its arms slidably mounted in the grooves G. In each of the free ends of the arms of the yoke a pin is mounted. The body B has a pocket opening into the recess R; toothed pawls P of different lengths are loosely mounted on the pins and have their outer ends fulcruming on one wall of the pocket mentioned.

No. 1,027,203—to Leroy Halverstadt, Leetonia, O. Granted May 21, 1912; filed January 24, 1912.

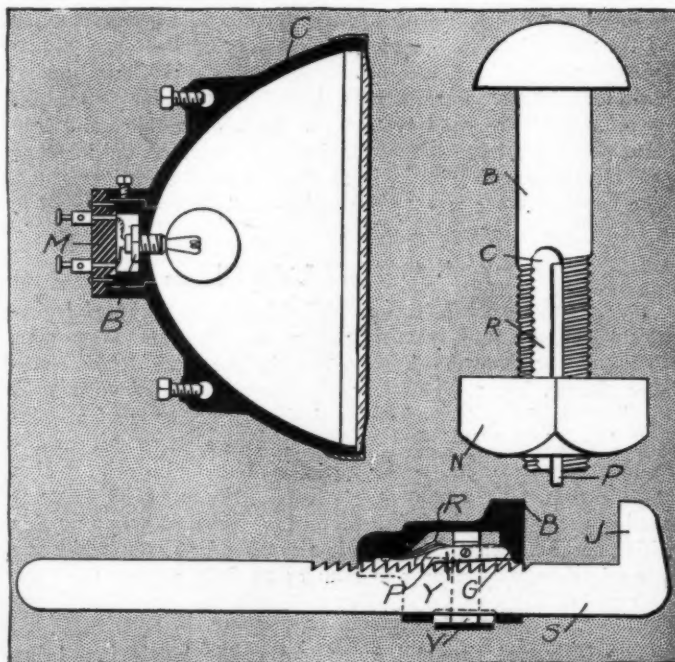


Fig. 3—Avery headlight. Fig. 4—Rice nut-lock mechanism. Fig. 5—Halverstadt wrench